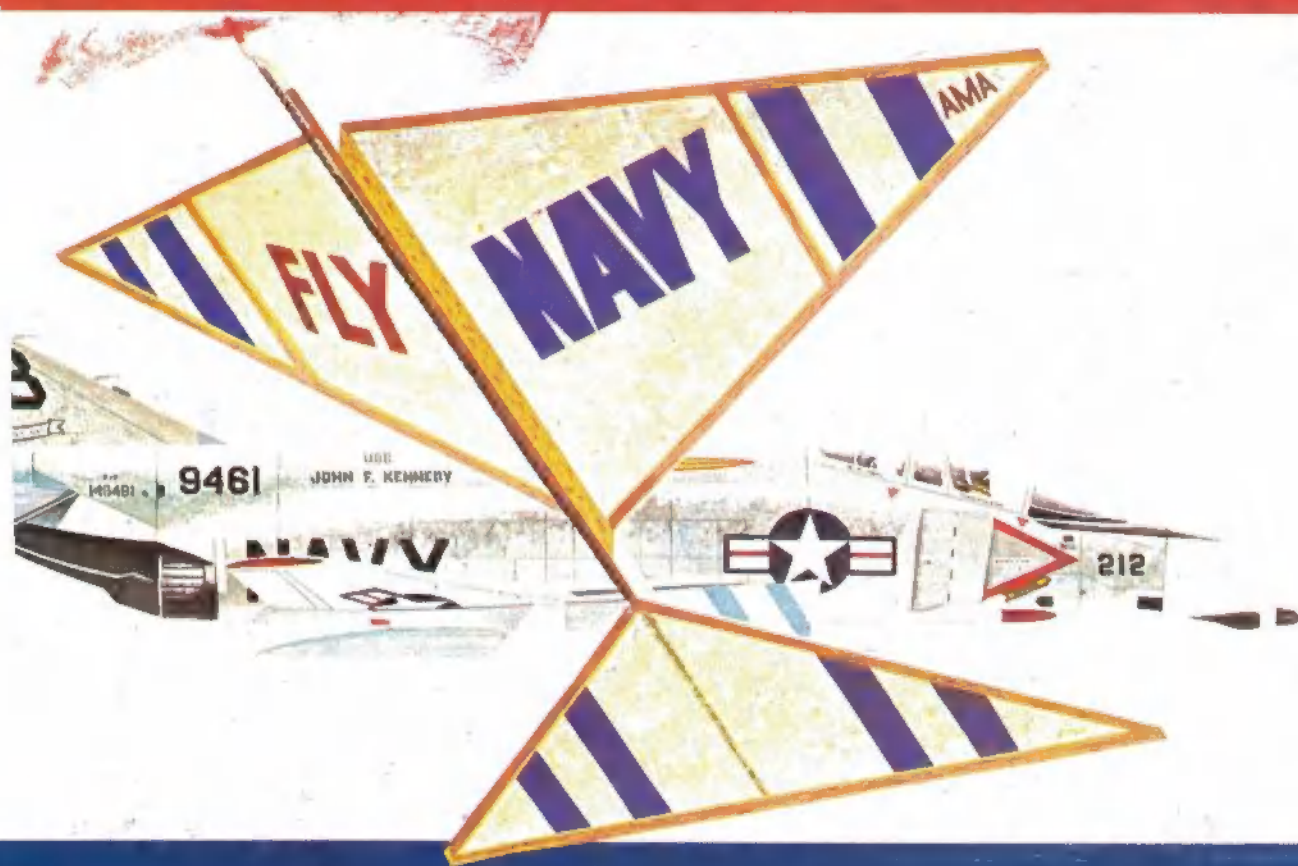


# AMERICAN aircraft modeler

Where The Action Is With AMA

## 1972 MODEL AIRPLANE CHAMPIONSHIPS



For R/C

### Warlock!

For The Tenderfoot

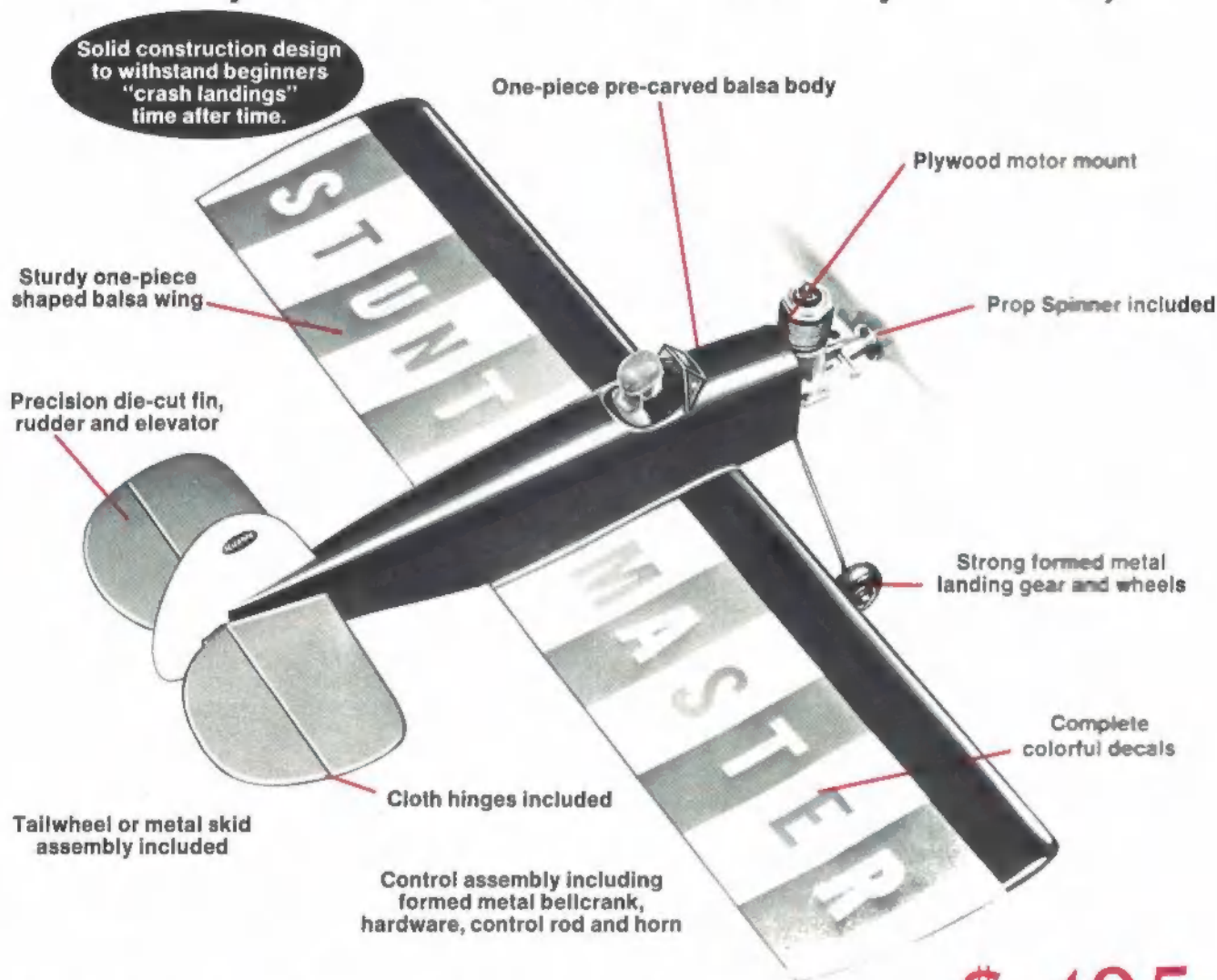
### A Flying Witch!





# You're in Control-Line

Buy it today...fly it tomorrow.  
They're almost ready to fly!



- Only the finest grade balsa and plywood used throughout
- Every kit specially designed for engines .020 to .049 by the world's leading modelers
- Complete, easy-to-follow assembly instructions included
- Precision die-cut and formed parts for perfect fit and easy construction

One look will tell you these Scientific kits are designed to get you flying F-A-S-T! That's because each one features our exclusive pre-carved balsa body and shaped one-piece wing construction (except Kit #72). All include the necessary formed metal parts and many include a control handle, windshield, formed plastic cowl, canopy and pilot.

## \$495

**STUNTMASER KIT #25.**  
One of America's most popular models for sport or competition stunt flying. 18" wingspan.

**SCIENTIFIC MODELS INC.**

340E Snyder Avenue • Berkeley Heights, New Jersey 07922

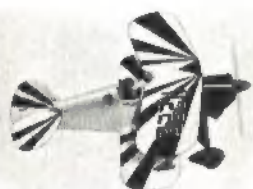
SEE YOUR DEALER. If kits are not available at dealer, you may order direct from factory adding \$1.00 for postage and handling. Outside U.S.A. add \$2.00.

# the air fast



# Flying Models

21 popular models to choose from at one low price. **\$4.95**



Kit 20 LITTLE STINKER, 18". Popular aerobatic speedster.



Kit 26 LITTLE MERCURY, 18". Easy to build and fly.



Kit 70 F-51 MUSTANG, 21". Famous WW II fighter.



Kit 72 SUPER STUNTMASTER 20". A built-up wing stunt sensation.



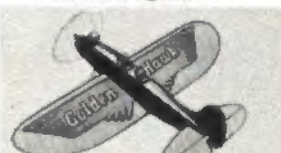
Kit 74 MESSERSCHMITT ME-109, 18". German WW II fighter.



Kit 60 STUKA DIVE BOMBER 18". Scale model of W.W. II fighter



Kit 95 PIPER CUB TRAINER 18". Famous private trainer



Kit 48 GOLDEN HAWK 18". A great model for fun flying



Kit 58 P-40 FLYING TIGER 18". Famous W.W. II fighter



Kit 30 RED DEVIL 18". Great training model for beginners



Kit 6 CESSNA BIRD DOG 18". Scale model U. S. "Flying Jeep"



Kit 54 CESSNA "182" TRI-CYCLE High performance private plane



Kit 14 PIPER TRI-PACER 18" with popular tri-cycle landing gear



Kit 28 LITTLE DEVIL 18" Fast, easy to fly, great performer



Kit 7 CESSNA "180" 18" Model has good looks, great speed



Kit 53 RED FLASH 18" Model has sleek looks, good control



Kit 8 PIPER CUB CRUISER 18" Most famous of all Piper Cubs



Kit 65 ZIG ZAG 18" A stunt sensation, great looks too



Kit 18 LITTLE MUSTANG 18" Fast easy to fly semi-scale model



Kit 29 LITTLE BIPLANE 70 sq. in. wing area, 2 preshaped wings

HERE'S THE COUNTRY'S HOTTEST

# rubber flying model

## Sky Master

BIG 36 INCH WINGSPAN

YOU FLY IT A MILE... with truly amazing performance like you never thought possible. Big deluxe kit includes Hi-Thrust Propeller, Formed Leading and Trailing Edges, Formed Wire Parts, Pure Contest Rubber Drive, Colorful Decals and Full Size (44") Easy to Follow Plans.

**\$4.95**

KIT 160

Featured in the Movie  
"THE LONG FLIGHT"



Send for our big colorful catalog... only 25¢

SEE YOUR DEALER. If kits are not available at dealer, you may order direct from factory adding \$1.00 for postage and handling. Outside U.S.A. add \$2.00.



Bob Lopshire's drawing for the 1972 Academy of Model Aeronautics National Model Airplane Championships held at the U.S. Navy's Glenview NAS, and Art Director Kelly Matthews' photo of a flying witch for Halloween.

There's a Warlock on page 42.



The Nats is People in Action. See page 20.

## ARTICLES

- Jim McNerney* 8 GETTING STARTED IN RC  
*Fred Marks* 16 BLUE RIBBON REVIEW—PART I  
 AUSTRALIAN SILVERTONE RADIO  
*Bob Beckman and Ed Sweeney* 18 BLUE RIBBON REVIEW—PART II  
 DU-BRO'S WHIRLYBIRD 505  
*Jim Wilmot* 42 WARLOCK  
*Dennis Adamisin* 46 SWEET PEA  
*Frank Scott* 52 WITCHCRAFT

## FEATURE

- AAM with AMA* 1972 NATIONAL MODEL AIRPLANE CHAMPIONSHIPS  
*Carl Wheelley* 20 WHERE THE ACTION IS WITH AMA  
*Bob Meuser* 24 FREE FLIGHT  
*Don Lowe* 28 RADIO CONTROL  
*Bill Boss* 32 CONTROL LINE  
*Bob Stockwell* 36 PYLON  
*Carl Wheelley* 38 NATIONAL CHAMPIONS

## ACADEMY OF MODEL AERONAUTICS

- 100 SCALE, INDOOR WORLD CHAMP RESULTS  
 101 CONTEST CALENDAR

## DEPARTMENTS

- 10 MODELER MAIL—LETTERS TO THE EDITOR  
*Frank Pierce* 14 NEW PRODUCTS CHECK LIST  
 58 WHERE THE ACTION IS  
 104 INDEX TO ADVERTISERS  
 106 QUALITY SHOPS/CLASSIFIED ADVERTISING

## STAFF

- Editor and Publisher* EDWARD C. SWEENEY, JR.  
*Managing Editor* ANNA MARIA NUNEZ  
*Art Director* KELLY M. MATTHEWS  
*Circulation Development* JOSEPH R. WRIGHT  
*Subscription Fulfillment* GRETCHEN KNOWLES  
*Advertising Assistant* CAROLYN A. MUNSON

VOLUME 75, NUMBER 5 — NOVEMBER 1972

Published monthly by Potomac Aviation Publications, Inc., 733 Fifteenth Street, N.W., Washington, D.C. 20005. Edward C. Sweeney, Jr., President; Walter L. Hulstedt, Treasurer; Harvey E. Cantrell, Business Manager and Secretary.

**ADVERTISING DEPARTMENT:** 733 15th Street, N.W., Washington, D.C. 20005 (202) 737-4288. Western Advertising Representative: Aaron D. Viller & Associates, 5311 Venice Blvd., Los Angeles, California 90019. Tel: (213) 939-1161. Eastern & Midwestern Advertising Representative: Boynton and Associates, P. O. Box 551, Barrington, Ill. 60010. Tel: (312) 381-7726; offices also at 438 E. Washington St., Chagrin Falls, Ohio. Tel: (216) 247-7094. **SUBSCRIPTION RATES:** In U.S., Possessions and Canada, 1 Year, \$7.50; 2 Years, \$14.00; 3 Years, \$20.00. Elsewhere \$9.50 for one year. Payable in advance. Single copies 75 cents. Six weeks are required for change of address. In ordering a change write to American Aircraft Modeler, 733 Fifteenth Street, N.W., Washington, D.C. 20005. Give both new and old address as printed on last label. We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage. When writing the editors address letters: Editorial Office, American Aircraft Modeler, 733 Fifteenth Street, N.W., Washington, D.C. 20005.

**POSTMASTER:** Send Form 3579 to American Aircraft Modeler, 733 Fifteenth Street, N.W., Washington, D.C. 20005.

Second class postage paid at Washington, D.C. and at additional mailing offices.  
 ©Potomac Aviation Publications, Inc. 1972. All rights reserved. Printed in the U.S.A.

# Bonus baby.

It's no rookie. It's a veteran of tough competition. It's our number one professional.

The Super-Pro is the top-of-the-line unit for serious-minded, competition flyers.

The Super-Pro features 14 tuned circuits and triple-tuned RF stage, dual conversion mixer and narrow-band, solid-state filter block — all working to give you the best in frequency selectivity.

The Super-Pro has our new precision I/C servo amplifier and a 6-bit I/C shift register. The Super-Pro has the smallest, lightest servos available anywhere.

All Super-Pro's have six channels. And you can choose either one or two sticks.

How do we price a bonus baby?

\$439.95 for the two-stick, six-channel Super-Pro.

\$459.95 for the one-stick, six-channel Super-Pro.

Not bad for a star.

EK-logictrol Super-Pro.

Try it. Price it. Fly it.

And if you mean to stay in the air, take the controlled approach.

## EK-logictrol

The controlled approach

For our full-line brochure, write: EK-logictrol, 3233 W. Euless Blvd., Hurst, Texas 76053





# HOBBY PEOPLE

130 EAST 33RD STREET LOS ANGELES, CALIFORNIA 90011  
THESE PRICES GOOD UNTIL NOV. 20

CAN'T WAIT? CALL (213) 233-4484  
FOR FAST C.O.D. SERVICE.



WOULD YOU BELIEVE?

WE  
GOOFED

## OUR GOOF IS YOUR GAIN. . . . . OUR BUYERS ARE CRYING!!!!

THEY CAN'T SELL AT THESE PRICES YOU SAY!  
WELL THEY CAN, AND THEY ARE!!!!!!!!!!!!!!

### SKYLANE 62

TOUGH ROOMY CABIN AND FRONT ENG. FOR 2 TO 4 CHANNEL PROPORTIONAL. STEERABLE NOSE GEAR. SPAN 62". WEIGHT 4½-5 LBS. FOR .35 TO .45 ENGINES.



REG. \$36.95

**\$24.95**



CARL GOLDBERG

### SKYLARK 56



**\$16.95**

REG. \$22.95

NOW WITH 1-PIECE FULL-LENGTH SIDES 2 TO 4 CHANNEL PROPORTIONAL. SPAN 56". WEIGHT 3½-4½ LBS. FOR .15-.19-.35 ENGINES. COMES COMPLETE WITH COIL-SPRUNG NOSE GEAR, FORMED MAIN GEAR AND MUCH, MUCH MORE!

### SR. FALCON

**\$24.95**



THE STANDARG BIG TRAINER. FOR 4 CHANNEL PROPORTIONAL. SPAN 69". FOR .35 TO .60 ENGINES. COMES WITH ALL DELUXE, TOP QUALITY FITTINGS, COIL SPRUNG NOSE GEAR, FORMED MAIN GEAR, SHAPED AND NOTCHED LEADING AND TRAILING EDGES, CLEANLY DIE-CUT RIBS, FUSE SIDES, FORMERS, ETC. NEW SIMPLE "SYMMET-TRU" WING CONSTRUCTION.

REG. \$36.95

### RANGER 42



**\$13.95**

REG. \$19.95

THE VERSATILE ALMOST READY-TO-FLY FUN MODEL. TAKES SINGLE TO 4 CHANNEL PROPORTIONAL. ALSO FREE FLIGHT. SPAN 42" WEIGHT 26 OZ. FOR .049-.19 ENGINES.

### R/C NOBLER



RADIO VERSION OF THE WINNINGEST STUNT MODEL OF ALL TIME. WING SPAN: 51" ENGINE .35 TO .45.

REG. \$29.95

**\$20.87**

TOP FLITE

HEADMASTER

GALLOPING GHOST AND PROPORTIONAL GEAR. 48" WING SPAN. FOR .09-.35 ENGINES. READY MADE FUSELAGE.

REG. \$17.50

**\$12.95**

### THE CONTENDER



THE FIRST ALL-BALSA R/C MODEL YOU BUILD IN JUST 8 HOURS. WING SPAN 54" FOR .29 TO .60 ENGINES.

REG. \$34.95

**\$23.95**

130 EAST 33RD STREET, LOS ANGELES, CALIFORNIA 90011

# EXCLUSIVE



# PRODUCTS



**SVENSON  
#200  
FLY-BOY**

WHO SAID THAT AEROBATIC MODEL PLANES COULDN'T BE PRETTY? Svenson for sure didn't say it, and as you can see they've designed a beauty. Not to mention the fact that it's the ideal low wing R/C trainer. Its medium size engine, its forgiving rate of roll, and its gently approach makes the FLY BOY a valuable possession indeed for the modeler before he takes the big jump up to all out competition models. Plane comes in a COMPLETE kit! It has a wing span of 58 in. and is made for engines 29-38 R/C training to 40-50 (Pattern) and 4 channel equipment.

REG. \$55.00 now \$37.88



**SVENSON  
#201  
SLY-CAT**

IDEAL FOR LEARNING TO FLY WITH AILERONS. Features a shoulderwing with a semi-symmetrical airfoil, tricycle landing gear, and a 58" span. Can be powered by any good engine between 29 and 40 and 4 channel R/C equipment. Kit includes full size plans with multi-lingual instructions, large unbreakable canopy, steerable nose gear, main landing gear, 3 air wheels, rubber wing supports, R/C tank, all necessary control horns, nylon hinges, engine mounting hardware, and many other items. A truly COMPLETE kit.

REG. \$50.00 now \$34.88



**SVENSON  
#202  
MINI-MULTI**

40" SPAN THE 'MINI' R/C AIRPLANE THAT'S EASY TO FLY! This is the MINI MULTI, the world's smallest R/C multi airplane. It fits easily into even the smallest car! This mighty midget will fly the whole FAI or AMA schedule from a football field! What's more, it's easy to build. The kit contains full size plans, instructions and all of the following extras: steerable nose gear, main landing gear, R/C clunk tank, nylon hinges and control horns, aileron horns, blind mounting cuts and screws for the engine, canopy, 3 air wheels, and many other features.

REG. \$25.00  
now \$18.88



**SVENSON  
#204  
AZIZO GLIDER**

The AZIZO is a proven 'club design', refined by years and years of field tested improvements. Now, it is offered as a Svenson kit for everyone's flying pleasure. The AZIZO is the fearless and fearless initiation into R/C flying. Its main features include step by step photo instructions, roomy fuselage to accommodate any R/C installation, and a rock stable thermal glider. This plane can be used as a rudder only slope soarer, or as a power assisted glider when equipped with its power pod. Its wingspan 78 1/2 in. with a total area of 820 sq. in.

REG. \$28.00  
now \$17.76



**SVENSON  
#203  
WESTERLY**

A 58" span all-weather beginner-ship that can be powered by any engine from .15 to .25 and will accept any type of R/C equipment from the button-type single channel to the modern proportional outfits. The kit contains full-size plans, instructions, and much, much more.

REG. \$40.00  
now \$24.88



**SVENSON  
#205  
K8B**

The wingspan is 110 in. which is over 9 feet. Total area is 873 sq. in. It's that big, yet its total flying weight is ... more 93 oz. Kit contains the American version with the Schweizer type canopy. The K8B is equally well suited to slope soaring and thermal flying. It can be equipped with any 2 or 3 channel group, set for 4/6 channel (screw) for rudder and elevator control. The kit features a two-piece wing, and one piece stabilizer with 'Cam Lock' fastener. Also included are super detailed full size drawings and precise instructions with many photographs taken during the actual building of the model. The Svenson K8B is the ULTIMATE IN GLIDER FLYING!

REG. \$50.00  
now \$34.88



**HOBBY  
PEOPLE'S  
QUIET-TONE  
MUFFLERS**

REG. \$10.00

CUSTOM MACHINED FOR EXACT FIT. HEAVY STEEL STRAP FOR SECURE AND EASY MOUNTING. GREAT FOR SCALE! SIZES AVAILABLE:

VECO .19 O.S. MAX .15R/C  
VECO .61 O.S. MAX .50  
K&B .40 O.S. MAX .60  
O.S. MAX .15 STD.

MORE SIZES

AVAILABLE SOON!

**\$347**



**HOBBY PEOPLE  
PHOENIX RADIO**

**\$208.88**

DELUXE FULLY ASSEMBLED 6-CHANNEL, 2-STICK PROPORTIONAL SYSTEM. COMPLETE WITH 4-S5 SERVOS. 5TH CHANNEL IS LINEAR AND THE 6TH CHANNEL IS FOR RETRACT LANDING GEAR. COMES COMPLETE WITH NICKEL CADMIUM BATTERIES FOR BOTH THE TRANSMITTER AND RECEIVER. AND CHARGER REG. OVER \$330.00



**AME HEAT  
GUN**

REG. \$24.95

**\$1947**

NOW

THE AME HEAT GUN IS A PROFESSIONAL TOOL SPECIFICALLY DESIGNED FOR USE WITH HEAT SHRINKABLE AIRCRAFT COVERINGS.

## ELECTROCONE GLOW PLUGS



R/C HOT OR  
R/C COLD  
REG. \$1.29 ea.  
SALE PRICE  
3 FOR

**\$1.99**

STD. LONG OR  
STD. SHORT -  
REG. \$ .75 ea.  
SALE PRICE  
4 FOR

**\$1.99**

## MODELERS' TAP AND DRILL SET



**\$776**

INCLUDED IN THE SET ARE A TAP AND DRILL IN EACH OF THESE FOUR SIZES: 2-56, 3-48, 4-40, AND 6-32. THE TAP WRENCH IS ADJUSTABLE, ACCOMMODATING ALL OF THE SIZES. NO MODELER SHOULD BE WITHOUT THIS VALUABLE SET OF TOOLS.

## "DURA-LINE" SILICONE FUEL LINE

TRANSPARENT BLUE COLOR ALLOWS YOU TO SEE ITS OPERATION YET IT IS STURDY AND THICK-WALLED. IT WILL NOT DISCOLOR OR CRACK WITH AGE. SMALL SIZE NO. 106 IS FOR SMALL TO MEDIUM ENGINES, AND LARGE SIZE NO. 105 IS FOR MEDIUM TO LARGE ENGINES.



10¢ PER FT.

# getting started in R/C

JIM McNERNEY

Modern radio control equipment, besides being a marvel of performance and precision, is fairly rugged. There are certain practical limits as to how much abuse can be withstood. Those things which can cause damage to the equipment include: shock (crash), vibration, moisture, wide ambient temperature changes, manhandling and overload. The majority of the effects of these adverse conditions can be minimized or negated by proper installation of equipment. The rest is a matter of common sense and reasonable care.

The manufacturers have provided some vibration isolation in the basic radio. Rubber grommets installed in servos and some receivers provide isolation mounting. Individual power cells are potted within the battery pack to reduce vibration sensitivity. However, many electronic components, mounted vertically on the circuit boards, are susceptible to some vibration modes. Everything solid has some resonant frequency, that is, a frequency at which maximum energy is transferred into the body.

For example, you have heard or seen the story about the opera singer's voice being able to shatter a glass. The theory is that the singer's pitch is at exactly the resonant frequency of the glass allowing maximum transfer of energy into the glass and ultimately—*crash!* If the glass had been packed in three inches of loose foam, the opera tenor could have gotten a hernia and the glass would have survived. The foam breaks up the sound waves, allowing only a small portion to pass through.

Now think about that rear rotor forty turning up at twenty-three thousand. And there are all those little goodies—resistors, capacitors, transistors, IF cans, etc.—attached to the receiver which is firmly strapped down to the fuselage. The fuselage acts like a funnel to direct all the sound energy of the engine directly to the receiver. The result? You guessed it. I have seen the insides of a receiver literally shattered by vibration!

While on the subject of vibration—a word about flutter. Flutter is aerodynamically induced vibration. Suppose there is a little play in the aileron linkage. You put the bird into a high speed dive; the ailerons, in turbulent flow, start to buffet. The faster you go, the worse the buffet. If you hit the resonant frequency of the ailerons, you will lose them. If you hit the resonant frequency of the wing—*splat!* Even if you do not hit resonance, the flutter is fed back through the linkage to the servo. This is a quick and easy way to ruin servo gears. They can fret just enough to hang up the next time you try a slow roll. Moral: linkage should be free moving but with no play. This goes for hinges, too.

Back to vibration isolation. Packing the glass we talked about in foam isolated or de-coupled the glass from the singer's mouth (sound source). So this is the solution. Isolate the radio from the sound source. The grommets on the

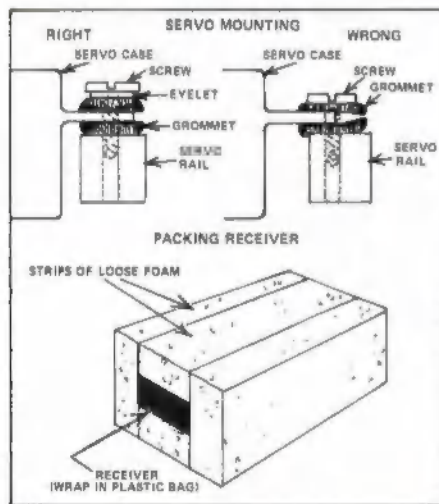
servo will do the job provided that (a) you do not cinch down on the mounting screws until all the give is gone from the grommets and (b) the servo is not touching any other component or structure at any point (except the pushrod). The receiver can be isolated by wrapping with ½ to 1 inch of loose foam. Some people wrap the receiver in loose foam, then wind about six yards of masking tape tightly around the outside, compressing the foam to the consistency of concrete. That's a no-no.

Batteries need vibration isolation, too. Although many are potted with silicone compounds, they are encased in hard plastic that transmits vibration. Under the right conditions, vibration can cause internal breakdown of the individual cells. The best solution here is again the use of soft foam. While you are at it, cover both the receiver and battery with a polyethelene bag before or after surrounding with foam. If you put the polyethelene outside the foam, make sure you don't compress the foam material. The polyethelene prevents moisture intrusion which can not only damage the components themselves, but, in the case of fuel, will attack the plastic cases.

What about crash protection? Those things you do for vibration isolation also provide some crash protection. Additional protection can be gained by adding a layer of dense foam or G-pad outside the light foam. Don't use these dense foams by themselves. Don't use double side foam tape to secure components. Use servo mounting trays recommended by the manufacturer, whenever possible. If you cannot use servo trays, be sure to use sleeves or eyelets inside the mounting grommets so that when you tighten the mounting screw, the sleeve takes the load—not the grommet. Component placement is important too. CG requirements or control rod position forces some limitation on component location.

Consider the typical installation with the battery forward, then the receiver, then the servos. In a crash, the receiver, normally the most delicate component, is sandwiched between the batteries and the servos. The receiver normally loses such a confrontation.

There's not much you can do about temperature, but there are some considerations. Don't lubricate the servo mechanics unless specifically recommended by the manufacturer. In cold weather the lubricants stiffen and the servos become sluggish. Some of the older equipment utilizing germanium transistors is subject to thermal runaway. That is, in hot weather, the transistors heat up uncontrollably and eventually fail. In the case of some output transistors they will, under certain circumstances, explode. Temperatures on concrete or asphalt in the summertime can easily exceed 110°F. The temperature inside a dark colored fuselage can also be very high. The use of a light colored cover or a tent canopy over your model in the summertime is recommended.





# CARL GOLDBERG

## NEW RANGER 42

The Versatile Almost-Ready-To-Fly Fun Model.

**\$1995**

Takes Single To 4 Channel Proportional Radio. Molded Fuselage... One Piece Molded Wing, Stabilizer and Vertical Fin. Also Free Flight. Span 42". Weight 26 oz. For .049-.10 Engines.

## SKYLARK 56

**\$2295**

1-Piece Full-Length Sides

Now With 1-Piece Full-Length Sides. Takes 2 to 4 Channel Proportional. Span 56". Weight 3 1/2-4 1/2 lbs. For .15-.19-.35 Engines.

### FEATURES:

- Semi-symmetrical wing section
- Coil-sprung nose gear... formed main gear
- Shaped and notched leading and trailing edges
- Cleanly die-cut ribs, fuse sides, formers, etc.
- New simple "Symmet-TRU" wing construction

## JR SKYLARK

For Single or 2 Channel, Pulse or Digital. Span 37" Weight 18 oz. For .049 Engines. **\$8.95**

## Skoestring \$2995

The Goodyear Racer With Enough Area and Stability So You Can Fly It! For 4 Channel Proportional. Span 54"; Area 540 sq. in.; Weight 4 1/2-5 lbs. For .19-.40 Engines.

### FEATURES:

- Shaped leading edges plus sheeting
- Symmet-TRU wing construction
- Full-length sides, sheeted trailing edges
- Cleanly die-cut ribs, formers, etc.
- Formed spring aluminum landing gear
- Semi-symmetrical wing section.

## THE FLYING FALCONS

More Falcons have been built and flown in the past 10 years than any other R/C. For values and features in a functional, rugged airplane, your best bet is a Falcon. Every design element engineered for simplicity and fast-building.

**FALCON 56 \$19.95** Medium-Size Trainer. Single To 4 Channel Proportional. Span 56". For .15-.19-.35 Engines.

**SR. FALCON \$36.95** Standard Big Trainer. 4 Channel Proportional. Span 69". For .35 To .60 Engines.

**JUNIOR FALCON \$7.95** Small Trainer. Single or 2 Channel. Span 37". For .049 Engines.

# MODELS THAT ARE REALLY GREAT TO FLY!

## SKYLANE 62

Semi-Scale Beauty in a Great Flying Model!

**\$36.95**

Tough, Roomy Cabin and Front End. For 2 To 4 Channel Proportional. Steerable Nose Gear. Span 62". Weight 4 1/2-5 Lbs. . . . For .35 To .45 Engines.

### FEATURES:

- See-through cabin, with die-cut plywood cabin sides
- Shaped leading edges plus sheeting
- Cleanly die-cut parts that fit
- Clark Y wing section, hardwood struts
- Steerable nose gear, formed main gear

## 1/2A SKYLANE \$9.95

For Single or 2 Channel, Pulse or Digital. Span 42". Weight 22 oz. For .049 To .10 Engines

All Carl Goldberg Models Come With All Major Fittings Such As Nylon Snap-Links, Control Horns, Snap 'R Keepers, Full Size Plans, Illustrated Step By Step, And Folder on How to Set Up and Operate R/C Models.

## LOOK WHAT A MODELER SAYS!

"Enclosed is a photo of a model of your SKYLANE 62 which I have just completed. I enjoyed building this plane, it is the first model that I have built in 25 years. Several months ago I observed a group of men flying some R/C models and this rekindled my interest in model planes. Having never built an R/C model, I was dubious which model to build. After some investigation I settled on your kit and I was not disappointed. It was so different from anything that I had built previously and I must say that it went together very easily. The plans were complete, left nothing to guess work. I followed the plans exactly with the exception of the motor and I installed a slightly larger motor, a Max OS 40. I am very pleased with the results. I felt I should write and let you know how much I appreciate this kit and I hope to be able to build all of your planes eventually. Again thanks for such a fine kit."

Arnold B. Johnson  
Troutville, Virginia

AVAILABLE IN CANADA

CARL GOLDBERG MODELS INC.

2545 W. Cermak Rd., Chicago, Ill. 60608

I am sending 20¢ for 8 pg. Illustrated Catalog with "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment, and Radio Control Definitions.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

# CARL GOLDBERG MODELS INC.

2545 WEST CERMAK ROAD • CHICAGO, ILLINOIS 60608

P.S. For best service, see your dealer for items you want. If not available, write direct; add 35¢ per item (75¢ outside U.S.). Minimum order \$1.



## Modeler Mail

### Californian who cares

Lt. Richard Jacobs wrote from Fort Leavenworth, Kansas ("Modeler Mail" October 1972 AAM) detailing some of the problems modelers there are experiencing in their efforts to pursue our very fine hobby. I would like to buy them a one year subscription to *American Aircraft Modeler* to be sent to "The Aircraft Modelers," c/o Lt. Jacobs.

C.A. VanPerré Jr., San Jose, Calif.

*Your subscription has been entered and American Aircraft Modeler would like to match your generous contribution so the men at Fort Leavenworth will soon be receiving two copies of AAM each month. Your humanitarian effort will certainly be appreciated and admired by all modelers in all walks of life.*

—Editor

### More on lighter than air ships

I have been following your "Modeler Mail" letters about airships with some interest. I have been interested in building model airships for three or four years since I found an article in AAM for the RC Los Angeles. I felt rather disheartened when it wouldn't fly, but I continued to work on it and am still doing so.

In the meantime, I have built a small free flight rigid dirigible, three ft. in length, 1.5 cu. ft. volume. The gas is held in by a polyethylene plastic bag sealed by a soldering iron. The plastic is available as a drop cloth in any hardware store. The bag is fitted inside the balsa wood frame after being carefully fitted to avoid snapping the frame in case of over-inflation.

The bag alone can be used for a model blimp. Without the rigid frame, weight is not such a big problem and the difference can be put to use however the modeler wishes.

Remote control airships are not an impossibility. I've seen a flying model of the Hindenburg with rudder-only control and the possibility for up and down, but for economic reasons. It was powered by two electric motors that drove it at a speed of 3 m.p.h.

The U.S. Navy used a remote control blimp 17 ft. long for recruiting purposes. A photograph of it is in *The Complete Book of Model Aircraft, Spacecraft and Rockets* written by Louis H. Hertz.

Dirigibles 15 ft. or smaller are really

only good for indoor use. Unless radio controlled and sufficiently powered to fight against the wind, a thermal will take it away and you will never see it again (at least not in one piece).

Remote control gear suitable for airships is available. In the August, 1969 issue of AAM you published an article entitled "RC Mini Scale," in which you stated that the gear weighed 3/4 oz., a weight that I use as ballast on my blimp. RC impossible? Hardly.

I would like to correct a mistake that Dennis Lenehan made in his letter in the September issue. Real airships used a material called Gold Beaters Skin, not Goat Beaters. It is the inside of an ox's intestine and was named that because goldsmiths used it to cover gold when they beat it into thin leaves. It was used primarily in German airships like the Graf Zeppelin and Hindenburg. Americans found new fibers and treatments to use instead of Gold Beaters Skin because of its cost.

Helium may seem expensive, but its cost can be brought down by buying a tank and having it refilled when you run out. Small cans of helium are available, two 20 oz. cans for \$3.00. This size is nice for experiments or temporary trials in lighter than air.

Tony Avak, El Segundo, Calif.

### Practical, flyable airship

In your September issue you published a letter from Dennis J. Lenehan remarking as to the impracticality of a lighter than air ship. I too have been interested in these long forgotten monsters of days gone by. As a result, I have done some research on these craft and believe that the following formula proves that they will fly and are quite practical:

$$\left[ \frac{\pi R^2 \times L}{1728} \right] 1.2 \text{ divided by } 16, \text{ where}$$

the following are true. Diameter equals 26.0 in.; length equals 104.0 in.; 1728 equals the number of cu. in. in one cu. ft. The division by 16 and multiplication by 1.2 must not be simplified in any way. It must be used.

The numbers are derived by the following: Sixteen cu. ft. of gas will lift 1.2 lb. of material at atmospheric pressure. With this formula, you will wind up with 55,189.64 cu. in. or 31.938449 cu. ft. Division by 16 gives an answer of 1.996125 and upon multiplication by 1.2, the total lift will be 2.3 lb.

A 40 cu. ft. bottle of helium (don't use Hydrogen as it has very bad habits of exploding) will cost about \$16. The

# Hobby Lobby

INTERNATIONAL

**NEW! KDH ADJUSTABLE GLIDER**  
**TOW HOOK \$1.95**



2 1/4" long. Aluminum drilled block with smooth threaded hook.

**NEW! Midwest SUPER CHIPMUNK A-R-F**  
**Injection Molded Foam Plastic**

List price \$24.95 **SPECIAL \$19.97**



This sharp 46" span semi-scale model of the famous aerobatic plane is the same easy-to-assemble type of plane as Midwest's Cessna Cardinal. For .15 to .19 engine, flies on one, two, three, or four channels. The plane looks like it's ready to fly just sitting in the box. Has one-piece molded wing, stab, fin. Molded fuselage has built-in firewall, servo side rails.

**NEW! Hobby Lobby's BRAND Y WHEELS**



2" pair	\$1.00
2 1/4" pair	\$1.15
2 1/2" pair	\$1.30
2 3/4" pair	\$1.45
3" pair	\$1.55

Get ready—this'll be hard for you to swallow. We're offering these very well-known wheels at precisely HALF the PRICE

YOU'VE BEEN PAYING FOR THEM. Not only that, but these may very well be the best wheels you can buy for a model airplane. They are lightweight, they use a neutral-bounce neoprene rubber, and have a tread design that makes 'em look better than most others. I know that our offering them at these prices may have you thinking that they're some kind of junk, but all I can say is it'll only cost you \$1.00 to \$1.55 to find out if all this is true.

**EXTRA SPECIAL! Blue Max**  
**6 CHANNEL Digital**  
**Proportional SEMI KIT**



List price \$265.00

**\$166<sup>00</sup>**

Incredible as it may seem, you can now buy the 6 CHAN-

NEL semi-kit at a discount of nearly \$100 off of its list price! This \$166 price for a 6 CHANNEL semi-kit is actually cheaper than our previous price on the four channel semi-kit.

Please order quickly because even though this offer is being made during what is a somewhat slack time for radio sales, it is quite possible that demand could outrun supply at this extremely low price.

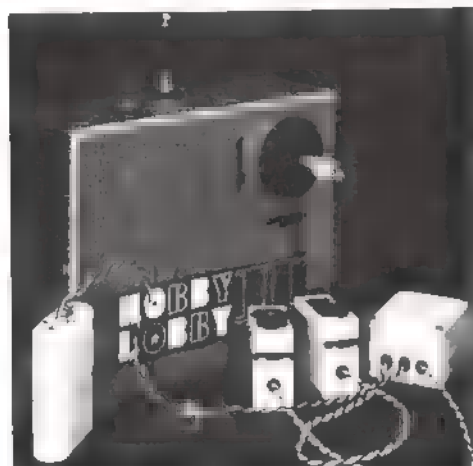
Outfit includes semi-kits for transmitter, receiver-decoder, 4 servos, all n-cads, charger, factory warranty on all factory assembled P/C boards. Your choice of 27 or 72 mhz. frequencies.

**NEW**

# HOBBY LOBBY 2

DIGITAL PROPORTIONAL

**\$79<sup>95</sup>**



- ★ Complete ready-to-use system
- ★ Deluxe 2-axis control stick
- ★ Long range
- ★ Rugged Construction
- ★ Light 9 oz. airborne weight
- ★ Three month Warranty
- ★ Unbelievable low price

HOBBY LOBBY 2 is a complete two channel ready-to-fly digital proportional system with excellent range for demanding uses such as RC gliders, and has the ruggedness and reliability that make it a

great beginner's outfit in planes like the Falcon 56, Tri-Squire, Lanier Aztec and Cessna.

HOBBY LOBBY 2 has a fine 2-axis control stick which is more expensive to produce than a 2 separate stick system. We think that it's important for a beginner to use a 2-axis stick because his transition to a 4 channel digital will be easier.

HOBBY LOBBY 2 includes transmitter, receiver, 2 World Engines S-5 Servos, battery box and switch harness, 27 mhz. band. Transmitter and receiver use inexpensive dry cells. (not included). Add \$6.50 if you want 72-75 mhz. band.

THE BIGGEST YEAR-END CLEARANCE SALE  
WE'VE EVER HAD!

# HOBBY LOBBY 5

DIGITAL PROPORTIONAL REG. \$209<sup>00</sup>

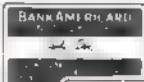
**Extra  
Special \$189<sup>00</sup>**

We have decided to introduce our 1973 Hobby Lobby radio in January of 1973 instead of in March as has been done in previous years. The 1973 Hobby Lobby radio will have features surpassing some of the most expensive radios made. In order to introduce the '73 in January instead of March '73 we must sell before the end of this year the radios that would ordinarily have been in stock until March '73. So . . .

HERE'S YOUR CHANCE TO GET ONE OF  
THE BEST RADIOS EVER MADE, AT A PRICE  
THAT CAN NEVER BE OFFERED AGAIN!!!



HOBBY LOBBY  
1972 ILLUSTRATED CATALOG \$2.00



**HOBBY**

**LOBBY**  
INTERNATIONAL

Route 3, Franklin Pike Circle, Brentwood, Tennessee 37027 - 615/834-2323

DROP YOUR ORDER IN THE MAIL BOX, THEN JUMP BACK BECAUSE WE SHIP FAST!  
We pay postage on all orders accompanied by check or money order. Satisfaction guaranteed or money refunded. Phone 615/834-2323 Store hours: 9 a. m. - 5 p. m. except Sundays.

## 3 UNUSUAL "Change of Pace" KITS FROM GERMANY.... SENIOR TELEMMASTER



**\$49.95**

- The largest RC Kit made
- 95" wing span
- Stable, gentle
- 4 channels
- for .40 - .60 engines
- Uncomplicated construction



**TELEMMASTER**

**\$34.95**

- 71" wing span
- for .30 - .60 engines
- Identical to Sr. Telemaster but smaller



**'RED EAGLE' (3-in-1 Kit)**

**\$49.95**

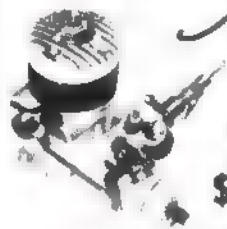
- Build it as biplane, high wing, or low wing—take your choice!
- 60" wing span (top wing)
- for .40 - .60 engines
- Vintage decals
- Very simple construction

**TRY US OUT: S.R. did**

"... Thank you for your outstanding response to my order. Hobby Lobby upholds an enviable record."

S.R. APO SF 96334

# Hobby Shack



*Taipan*  
15R/C  
Retail Price \$24.95  
OUR PRICE  
**\$19.96**

19R/C SCHNEURLE	Retail Price \$29.95	OUR PRICE <b>\$23.88</b>
19 STD. SCHNEURLE	Retail Price \$18.95	OUR PRICE <b>\$14.88</b>
Standard	Retail Price \$15.95	OUR PRICE <b>\$12.76</b>
15 Diesel	Retail Price \$28.95	OUR PRICE <b>\$22.67</b>
09 Diesel	Retail Price \$16.95	OUR PRICE <b>\$13.67</b>

Midwest SUPER CHIPMUNK & TAIPAN 15 R/C  
—COMBO—  
**NEW**

Here's a beautiful stunt trainer with a 46" span. The Taipan 15R/C will make flying easy!!!!  
**\$49.90 VALUE**  
**SALE \$36.99**

**RADIO SALE**  
6 CHANNEL  
BLUE MAX MARK II IC ASSEMBLED.  
This month we offer a special sale price on the 6 CHANNEL  
BLUE MAX MK II IC complete with 4 RS-5 servos, Ni-Cads, charger, and switch harness. This is a particularly good buy so order early as they will most likely go fast. You will note that our special discount price is not much more than the price on the 4 channel Blue Max system.  
**DISCOUNT PRICE \$225.00**  
CHANNEL MARK II SEMI-KIT  
Without electronic experience you can save X-tra \$55... just finish the mechanical assembly and wiring hook-up. Retail \$239.98  
**DISCOUNT PRICE \$179.00**

**Midwest**  
Choose the NEUPORT 17 or the FOKKER D-VII  
**SALE**  
**\$9.99** List Price \$19.95 Each!  
Both planes feature 14" foam wings and will fly with single or mini multi's, each is a famous WWI semi-scale model

NEW 1/8" MIDGET & TAIPAN 15R C!!  
—COMBO—  
The new 1/8" Midget was designed by Ed Norbora the 1971 Midget world champion. It meets all the 1/8" midget racing rules and is going to be most competitive with the TAIPAN 15R C up front.  
ALL BALSA KIT  
15 ENGINE  
40 SPAN  
LENGTH 12"  
Retail \$59.90  
**SALE \$44.88**

**RCM Trainer**  
**FOX 40R/C** **SAVE 30%**

This kit by Joe Bridi, offers a beginner a truly outstanding starter kit. Designed by Don Dewy and Joe Bridi for great handling characteristics. Hardware included.  
58 1/2" span 40-.60 disp.  
REG. \$44.95  
**REG \$25.95**  
The FOX 40R/C in the RCM Trainer will give you an easy to handle sport flyer perfect for the beginner!  
**SALE \$49.63**

**Bébé JOEL D-9**  
POPULAR FRENCH HOMEBUILT  
**Sale Price \$4.99**  
Reg. \$10.95

**SEIRRA TRAINER**  
**Sale \$29.99**  
SPAN: 67"  
DISP: 40-61  
AREA: 670sq"

**QUESTOR**  
GLIDER  
**\$26.95**

This beautiful compact size glider has the same precision machined parts that have become known in Airtronics kits. You get all hardware and can assemble the Questor in 6 to 8 hours.  
6' SPAN  
409sq.in. AREA  
NEW BRIDI RCM BASIC TRAINER & TAIPAN 15R C  
A beautiful trainer with a 50" span & Taipans 15R/C for a perfect Combo!  
**\$36.88**

bags for containing the gas — old weather balloons and will give, with experimentation, two hours of flight. Motive power is furnished by two Bonner transmitter servo motors run on 12 volts, and flown in a gymnasium. The radio used was a World Engines GG. With a new sub-miniature rig, the weight of the radio will decrease.

A word of caution: Build it so that when the machine is finished, it weighs about two oz. The reason for this being that when your battery packs get low on the motors and if they quit in the air, you don't have to shoot the beast down or wait for three hours for it to sink (that is where the experimentation came from).

The figures given for the diameter and length come pretty close to one-in. scale for the Hindenburg! They ain't perfect, but the sight of a dirigible in the air is well worth the sacrifice in scale deviation.

Robert Jones, Everett, Wash.

P.S. The formula was derived by the head cryogenic engineer for Scott Paper Co., so it is correct.

**Cardboard wing saves the day**  
A few evenings ago I was flying my Midwest Tri-Squire when a friend turned on his transmitter for a ground check and very neatly put my plane into a wire fence which completely shattered the wing. I remembered reading "Denny-

## SOLDERING IRONS & TIPS — HS



OUR HEAVY DUTY SOLDERING IRON  
• Quick heat  
• High Capacity  
• Watts

M 900 \$4.95  
Soldering Iron

Also Available—  
Additional Tips  
■ ■ ■ \$1.98  
Pack of Three

■ QUALITY VALUE!!!

### OUR FAMOUS PENCIL SOLDERING IRON

- Light weight
- Perfect Balance
- 30 Watts

M ■ \$2.95  
Soldering Iron

Also Available—  
Additional Tips  
M ■ \$1.98  
Pack of Four

PROVEN  
DEPENDABILITY !!

— 25c FOR CATALOG



**ENGINEERING**  
6917 W. 59th ST.  
CHICAGO, ILL. 60638

6475 KNOTT AVE. BUENA VISTA, CALIFORNIA 90620

mite" by Tom Abberger (November 1971 AAM) where he described the construction of a corrugated airplane. I decided to try his method of construction to build a new wing for my Tri-Squire.

Well, it took me about six hours to cut some ribs and to finish the wing which I built in two halves for the 2½" total dihedral required. I coated the raw cardboard with three coats of clear dope and used filament tape spanwise to insure a strong center joint. Right after the last coat of dope dried, I strapped on the wing and went out into my backyard for a test flight. Very much to my surprise, the plane flew beautifully. My thanks to AAM and to Tom Abberger for a very useful construction article. I am a newcomer to RC and have learned a lot in the past year or so.

Dick Swartwout, Penn Laird, Va.

### Reader poll ■ rocketry

We are writing this letter in hopes that we may convince you to consider our request that AAM publish a monthly article about model rocketry. We are certain that if you were to publish such a feature, many people would be pleased.

Tony Potset, Mark Longwith, Cleveland, Tenn.

*Your request is under consideration at AAM. How many other readers would like rocketry regularly?*

—Editor

## PAINT LIKE A PRO with BADGER SPRAY GUNS



They're the greatest for professional results in custom finishing models, detailing, blending, shading and fogging. Make designs, textures, patterns, stencils, etc.

### ADVANTAGES:

■ COMPRESSOR NEEDED/SMOOTHER THAN SPRAY CANS/MIX YOUR OWN CUSTOM COLORS/WILL WORK WITH ANY PAINT, LACQUER, SHELLAC OR VARNISH/EASY TO USE

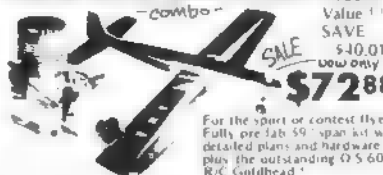
For amateur or professional, hobbyist, craftsman, handyman or do-it-yourselfer, Badger has the products for you. Badger's spray guns start at \$6.95. Available at most hobby stores. While there, ask to see Badger's Bench Top Power Tool with flexible shaft. Designed for the modeler and hobbyist, it cuts, grinds, deburrs, routs, drills, etc. If your local store does not stock Badger products write direct to: Dept. ■■■

FREE brochures available

**BADGER AIR-BRUSH CO.**  
8201 EASE AVENUE • FRANKLIN PARK, ILLINOIS 60131

# Hobby Shack

BRIDGES & U.S. 60R C GOLDHEAD \$109.99



Value \$119.99  
SAVE \$10.01  
Now only \$72.88  
For the sport or contest flyer. Fully pre-fab 59" span kit w/ detailed plans and hardware. Play the outstanding U.S. 60 R/C Goldhead.

FOR IMMEDIATE SERVICE  
FOR C.O.D. ORDERING DIAL  
(714) 522-4921

PILOT BOX FLY &  
O.S. 25 'COMBINATION'



a real 'quickie' with a covered wing and plywood fuselage. 1 die-cut full length sides, plus the O.S. 25 R/C engine \$53.45 VALUE

DISC PRICE \$39.99

CIRRUS 2CH.  
RADIO AND  
CANYON  
SCHWEIZER  
1-26 GLIDER  
-COMBO-



SALE PRICE

\$89.98

All foam glider 41" in length and a 6 foot 6 inch span. About 2 hours building time.

\$95.88 for combo on 72 mHz.

Lanier AZTEC & TAIPAN  
.19 R/C -COMBO-



An ARF foam wing and vacu-formed fuselage. Little building time, 65" span.

\$41.00

- GLIDER -  
HI-START

Rubber ■ Chute

You get 100 feet of 1/8" surgical rubber and a beautiful red and white parachute with nylon rigging.

SALE \$11.99  
GET BOTH

WE'RE OPEN 7 DAYS A WEEK  
AND EVENINGS TOO  
SHOWROOM STORE HOURS  
MON. thru FRI 9am - 9pm  
SATURDAYS 9am - 5pm  
SUNDAYS 10am - 3pm

2 CH.  
\$69.95



CIRRUS 2 CH. \$69.95  
CIRRUS 2 CH. \$69.95

If you have been wanting to get into Radio Control or needed an extra 2ch. system, now is the time. We are offering a full digital 2 channel rig complete with 2 separate servos, IC (integrated circuitry) two wire battery pack (dry) and a two stick transmitter with trim. Unheard of? How can we do it? Simple—the radio is factory direct from us to you. There are no distributors or other middlemen and these savings are passed on to you. For 72mHz. add \$10.00

Check the features of the CIRRUS:  
2 Separate servos - IC servo amp.-chip - IC decoder receiver chip - Low battery drain - 2 wire battery pack - Separate receiver - airborne weight only 7½ oz. - 90 day Warn.

## Hobby Shack DISCOUNT HOBBY CATALOG

FULLY ILLUSTRATED  
PAGES OF R/C PLANES,  
R/Control SETS, PARTS,  
ACCESSORIES AND SUP-  
PLIES, PLUS MODEL  
BOATING SECTIONS &  
GAS POWERED ENGINES

I enclose \$1.00 for your fully illustrated modelers catalog. Please rush it to me today!

MAIL THIS COUPON TODAY; TO:  
HOBBY SHACK

6475 KNOTT AVENUE  
BUENA PARK, CALIFORNIA 90620

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

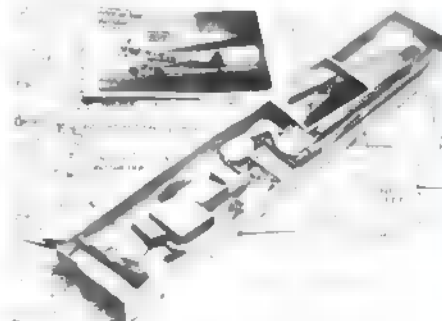
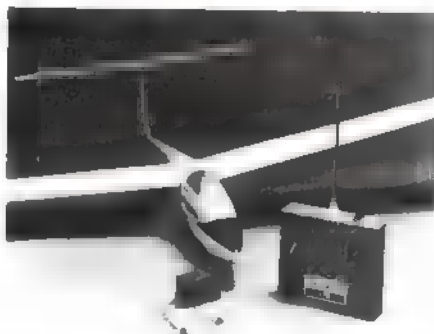
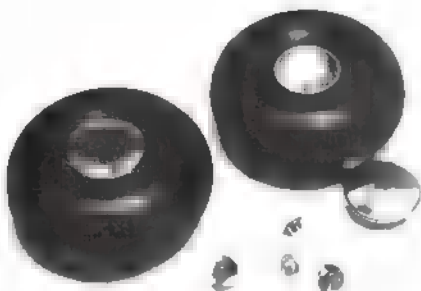
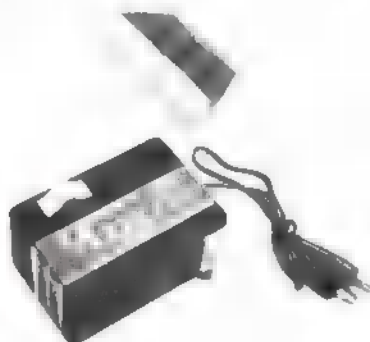
CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

### POSTAGE & HANDLING

Orders to \$ 5.00 add \$ .90 \$20.01 to \$30.00 add \$2.50  
\$ 5.01 to \$ 8.00 add \$1.00 \$30.01 to \$50.00 add \$2.75  
\$ 8.01 to \$15.00 add \$1.20 Any Order  
\$15.01 to \$20.00 add \$1.60 Over \$50.00 add \$3.00

# New Products Check List



**Jerabee/Dodge body.** Class A stock car Challenger 1/12-scale body is now available separately or as a complete engine-body-chassis unit. Available in red, black, yellow, or orange with clear windshield, full decals, \$5.95. Complete car with RC, \$119.95; without radio, \$39.95. Jerabee Industries, Inc., York Center, Redmond, Wash. 98052

**Tatone/Donut Wheels.** From Flight Line, 2 1/2" dia. wheels (shown) made of low-bounce neoprene rubber. With snap-on nickel-plated hub caps, bushings, acorn nuts; nothing extra needed. Durable long-lived equipment. 2 1/2" set, \$2.99, other sizes from 1 1/2" to 3". Spare hardware parts also available. Tatone Products, 1209 Geneva Ave., San Francisco, Calif. 94112

**EK-logictrol/New L'il Red Brick system.** For simplified installation of two- or three-channel systems, 1972 LRB system is hard to beat. Precision control sticks with adjustable tension, airborne weight of only eight oz. with two servos, low 25 MA current drain, 1% control accuracy. \$119.95 for two-channel installation. For additional information, write EK-logictrol, 3233 W. Euless Blvd., Hurst, Texas 76053

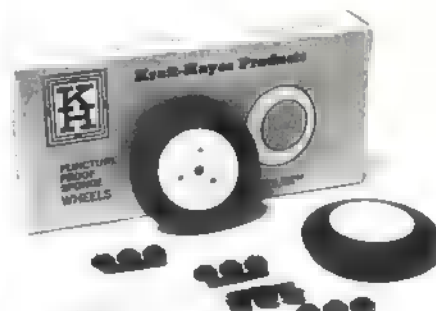
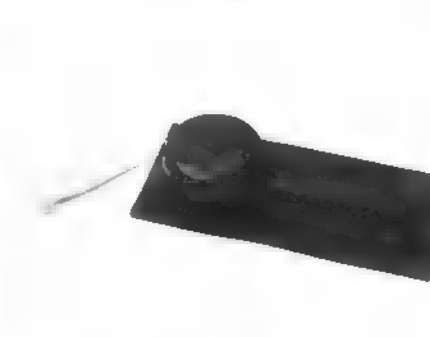
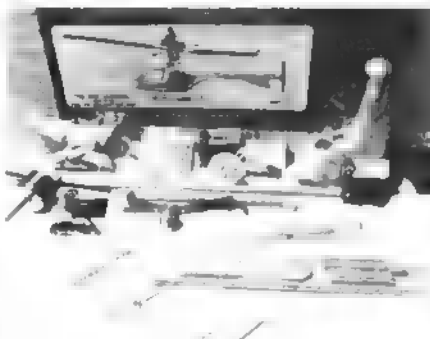
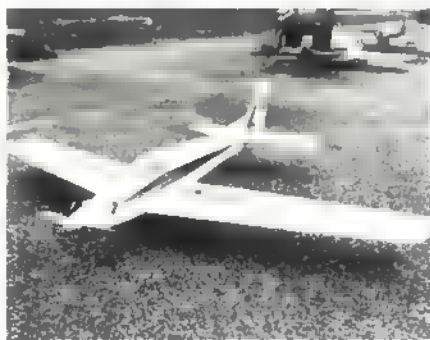
**Sonic-Tronics/Electric fuel pump.** Mk II pump can be driven by anything from a 1 1/2 volt starting battery to the 12-volt supply in your car. Pump has two-way controlled action, fills empties tank at touch of rocker switch. Centrifugal pump, high-impact case of fuelproof plastic, heavy-duty motor with low current drain. \$11.95. Sonic-Tronics Inc., 8017 Craig St., Philadelphia, Pa. 19136

**Sterling Models/New beginners' series kits.** Shown Shoestring and P47 Thunderbolt, two recent additions to Sterling's "S" Series CL kits. Fly them on 049 power, kits come complete with hardware (less lines and handles) motor mount, scale decals, gear and wheels. Easy to build, planes only six to nine die-cut parts, 21" span. Also available, colorful low-wing Cherokee. \$2.95 each. Sterling Models, Belfield and Wister St., Philadelphia, Pa. 19144

**Exposition Press/Amelia Earhart—The Myth and the Reality.** One of the most technical, detailed, and non-sensationalist books on Earhart, most notable because author Dick Strippel has resisted temptation to add to the "Amelia was captured" theory. This is a book which describes in detail not only her life but such hard-to-find data as a listing of the electronics equipment aboard her Electra, weights, power ratings, fuel consumption, etc. One is left with the feeling that author Strippel did outstanding research to justify his thesis. Hardbound, \$6. Exposition Press, Inc., 50 Jerico Turnpike, Jerico, N.Y. 11753

**Veco/19 RC engine.** Front rotor with hemispheric head machined from aluminum stock with machined crankcase, ball-bearing construction. Fit between head and crankcase is accurate that no gasket is needed. About \$30. K&B Manufacturing, 12152 Woodruff Ave., Downey, Calif. 90241

**Fly-Line Models/J3 Cub.** 1/4A RC or free-flight, 1938 Cub uses true 15/16" to 1" scale throughout, including scale wing rib spacing. Built-up wing and fuselage, sheet tail, total weight without radio is only 10 oz. Dummy engine and prop detail, all parts pre-cut, labeled and packaged. Well-written instructions and detailed plans. Plans only, \$3. Full kit, \$14.95. Herb Clukey, Fly-Line Models, 10543 Ashby Pl., Fairfax, Va. 22030



**Cox/Two-stage Saturn rockets.** New line features high-impact plastic kits of 33½" Saturn V and 21" Saturn 1B. 1/125-scale with NASA decals and re-entry parachute. Saturn V, about \$8, -1B, \$5. Write Cox, 1505 E. Warner Ave., Santa Ana, Calif. 92705

**Sig/Mustang 450.** Sig balsa and plastic molded cheek cowl and fuselage top, foam core wings with balsa sheeting skin, this scale racer has turned in an impressive list of honors during 1972, both in appearance, performance, and handling ease. Special instructions included for application of high-gloss fiber-glass-resin finish. \$29.95. Sig Mfg. Co., 401 S. Front St., Montezuma, Iowa 50171

**Fiber Foam Products/1/4 Midget Racer.** Inspired by Lindberg's *Spirit of St. Louis*, 1/4 Midget has 306 sq. in. wing area, foam core wing, top quality balsa throughout. Flying weight only 2½ lb. \$29.95. With veneer-covered wing, \$39.95. Additional info, write Fiber Foam Products, 6370 E. 22nd St., Tucson, Ariz. 85710

**Long Island Hobbycrafters/Phoenix-5.** Big 60-powered RC Pattern aircraft has 62" swept-back, fiberglass body and bellypan, glaskin wing and stab, pre-shaped ailerons and rudder, pre-bent landing gear. Flying weight, 6½ to 7 lb. \$89.98. Can be fitted with Rom-Air retracts, not included. Long Island Hobbycrafters, Inc., 7600 Shorefront Parkway, Arverne, N.Y. 11692

**Du-Bro/RC helicopter.** Four-channel 46½" dia. rotor, 11" overall length, kit has been extensively engineered for ease of assembly and flying. All parts machined for accurate, smooth fit. Flying weight, four lb., flight duration, about eight minutes. Flying instructions included. Approx. \$125. Du-Bro Products Inc., 480 Bonner Rd., Wauconda, Ill. 60084

**JCM Specialties/Retract wells.** Provides a professional-looking undersurface for your wing. Simply rough out wheel-well area and fit unit in place. Vacuum-formed well is made of high-impact styrene in 2½, 2¾, 3, and 3¼" sizes with 5" strut section. 98 cents a pair. JCM Specialties, Box 181, Medinah, Ill. 60157

**Kraft-Hayes/Sponge wheels.** In both standard and slim-line design (shown), wheels are lightweight, true-running and fit standard axles without drilling. Exceptionally good looking. From 2¼ to 2¾" dia. \$2.69 to \$3.19/pr. Kraft-Hayes Products Inc., 450 W. California Ave., Vista, Calif. 92083

**Bachmann/Scale model catalog.** Beautiful full-color catalog illustrates complete scale line from Bachmann, people who have been fabricating plastics in some form or another since 1833. For railroaders, a complete line of N and HO-scale equipment, ready-built plastic "mini-planes," nature crafts, plus complete Fujimi scale model line. Write Bachmann, 1400 E. Erie Ave., Philadelphia, Pa. 19124

**Hobby Capitol U.S.A./Scale-Like Wheels.** A permanent pneumatic, unbreakable wheel in a diamond tread, regular bounce or a smooth, low-bounce style. Inner hub is removable for brake installation. Sizes 2¼ in. to 3 in. Prices range from \$1.40 pr. to \$2.00 pr. Hobby Capitol U.S.A., 903 Church St., Nashville, Tenn. 37203



## PART I

# AUSTRALIAN SILVERTONE RADIO FLIES JAPANESE/GERMAN WANKEL ENGINE-POWERED AMERICAN HELICOPTER.

FRED MARKS

The Silverstone MK VII, used in the Du-Bro Whirlybird is a four-channel digital proportional set manufactured in Australia by Silverstone. The system is imported and distributed by Strato Model Products (Route 6, Blakely, Penn. 18447).

The system is also available on five or six channels. We obtained a second transmitter on loan to demonstrate use of the buddy system. The test set was a four-channel unit, while the second transmitter was a five-channel unit. Either four, five or six units may be operated as a buddy system; however, only four channels of a six-channel receiver would be active, and so on.

Included in the system is the transmitter, receiver, battery pack, four servos, buddy cord and an external, transformer-isolated, dual-output charger. The dimensional and statistical characteristics of the system are tabulated for easy reference. Also included with the test set was an in-line failsafe unit for use on any one channel, normally throttle. The system is available at 27 MHz and will soon be available on 72 MHz.

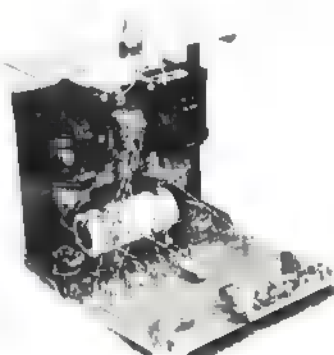
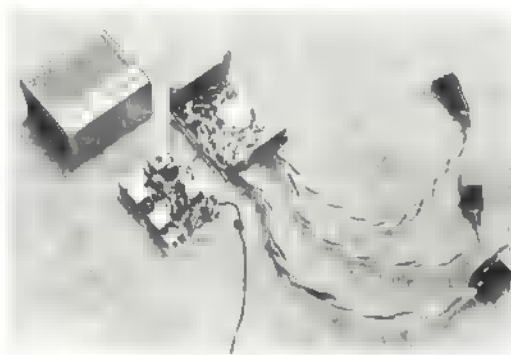
The transmitter and receiver are housed in copper-tone anodized aluminum cases. The transmitter uses a pair of Orbit stick assemblies for primary control. The fifth channel is controlled by a small lever at the upper left edge of the case. Recessed female sockets are provided at the bottom for charging and for the buddy cord.

Electronically, the repetition rate is controlled at approximately 60 frames per second via a free running multivibrator. This is followed by the typical half shot multivibrators which provide the series (four for our four-channel set) of control pulses. The differentiated, gated control pulse outputs operate on a three transistor modulator. The pulse train is routed to a "click" type control switch which permits selection between the instructor output of student transmitter. The modulation signal is routed to the RF section, which utilizes inductive oscillator tuning. The output network is inductive-capacitive (LC) with tuning achieved via a rather large piston-trimmer capacitor.

A small part of the output RF is coupled to a demodulator and used to drive the RF output indicator meter. During battery charge, with the transmitter off, this same meter indicates battery charging. A buddy-box arrangement is provided which permits control in either of the following modes: a) RF emitted by the instructor's transmitter and controlled by either the instructor or the student or b) RF emitted by the student's transmitter and controlled by either the student or the instructor. This permits the student to fly the instructor's aircraft with his own transmitter with the instructor all set to save it from destruction or for the student to fly his own aircraft with the instructor available to save the student's aircraft.

The preceding discussion is provided to show how a buddy system works. The MK VII instructions indicate quite clearly the procedures which should be followed in flying with a buddy-box. It

(Continued on page 68)



Top: Complete system shown above with optional fail safe device (dark object between receiver and servo at right). Note location of buddy switch.

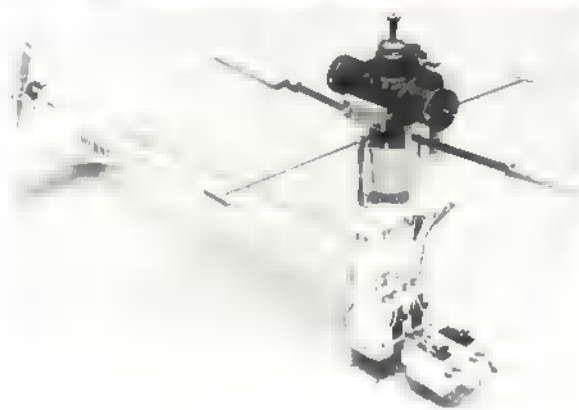
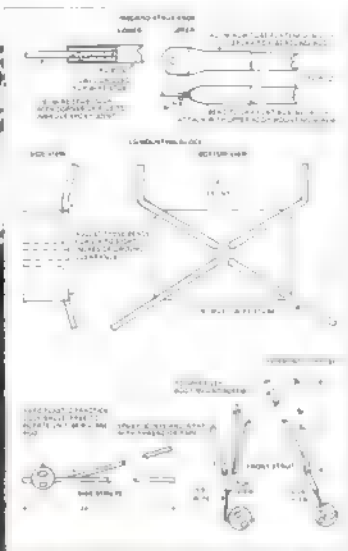
Above left: This is the receiver test flown and analyzed, since we have reviewed an IC decoder in place of the SCS decoder. Nice gold-plated polarized connectors are used.

Above right: Orbit stick assemblies used here. High quality 9.6V Japanese DECA-S — the transmitter. Left: Our system came with IC amplifier in the D&R mechanism but production units will use Orbit PS-6 mechanics.

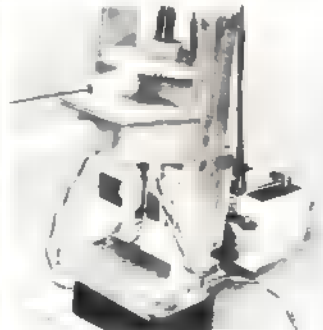
Below: Sweeney on a practice flight with the Ross-powered version. Moments later it crashed—but as usual, without harm.



# **PART II** **THAT "GOOFY THING" DAVE GREY DESIGNED,** **DU-BRO'S WHIRLYBIRD 505. BUILDING AND FLYING** **THIS MODEL WAS PURE FUN AND CHALLENGE** **BOB BECKMAN AND ED SWEENEY**



Top: Author with our Bird at the time of early testing with tripped gear. Note ideal shape and fit of the O.S. Wankel engine. Spinner for starting only but cooling fan needed. Above Left: Complete frame with Ross engine installed. Short bar of lead on this side of engine balances carburetor and exhaust stacks. All parts are quite serviceable. Above Right: Canopy removed to view inside. Snug body keeps the exhaust mess out fairly well. Incidentally, weight is not critical if you have plenty of available power. Left: Tail rotor operates at nearly zero pitch being used only for rudder function, not anti torque. Since photo was taken, we learned stabilizer should be omitted. Bottom Left: Six piece plastic body is easily assembled and long lasting. Bottom Right: Tail boom is tapering fiberglass roll and main frame is spruce. Sturdy and light.



Building the Du-Bro Whirlybird was sheer delight, for two reasons: First, it was a new experience in modeling. Helicopters are about the last "frontier" left in RC modeling, and it is fascinating to dig into the details of their construction and operation. Second, it's difficult to see how one could improve on the kit itself. It's not an ARF, and several enjoyable hours can be spent building it. The quality of the many metal, wood and plastic parts is excellent; the instructions are complete and easy to follow.

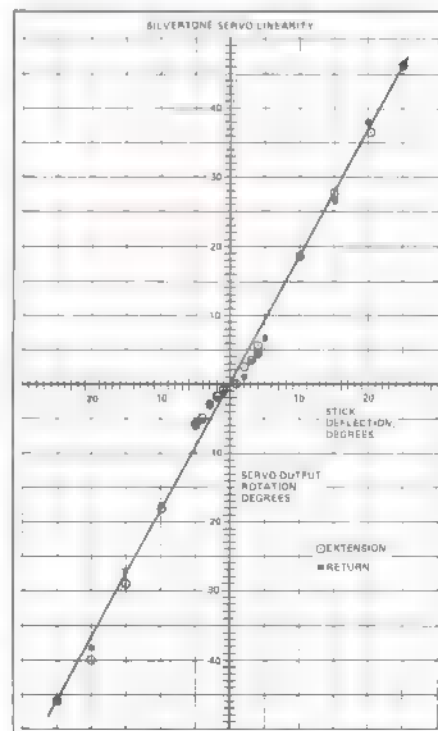
One note of caution: If you don't know how to solder, learn before you start constructing the Whirlybird. Most of the mechanical assemblies depend on solder joints; neat, effective soldering is a must. And keep in mind that this is soldering for mechanical strength, not electrical connection. Sta-Brite low temperature silver solder is recommended.

Construction of the chopper is so well covered in the instruction book that only two comments are needed here. The holes for the mounting screws at the lower end of the cyclic pitch servos should be drilled before installing the mounts for the throttle and tail rotor servos. And it is recommended that the horizontal stabilizer be omitted. Experience, confirmed by Du-Bro, indicates that the bird is more stable in windy conditions without the stab.

Early in the construction of the Whirlybird the decision was made to try the OS Wankel rotary piston engine. This engine seemed to be a natural for this application, even though its nominal displacement is less than the 0.40 called for.

Mounting the engine requires fabrication of a new mounting plate. A piece of 1/8" aluminum sheet is turned to the outside diameter of the Wankel's mounting ring, the same diameter as the fuel tank on the Whirlybird. The new

(Continued on page 75)





# Holiday Offer

Plans and designs of all kinds. Great model features. Full-scale articles and drawings. Enough Radio Control for the most ardent hobbyist. How-to-build articles and drawings for the TENDERFOOT. **WHERE THE ACTION IS** covers the latest trends, plans and lists of the best radio control and control line.

All this and more delivered to your door monthly at the low introductory rate if you subscribe now.

USE HANDY ENVELOPE—IT'S ALREADY ADDRESSED TO US—NO STAMP NECESSARY

## Gift Announcement

SENT IN YOUR NAME

Be sure to print your name on the envelope. We will immediately send an attractive gift announcement to the person you designate.

And a merry Christmas to you too.

The perfect gift  
for a friend,  
the family,  
or yourself!

ONE YEAR  
12 BIG ISSUES  
FOR ONLY—

**\$6.00**

SAVE \$3.00  
OVER NEWS-  
STAND PRICE



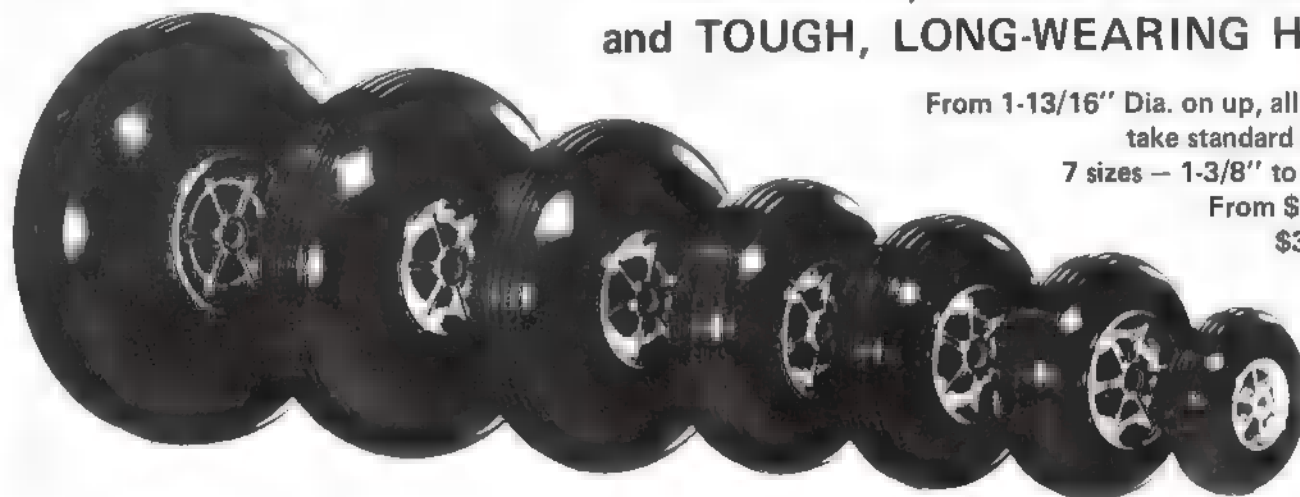
SAVE \$3.00  
OVER NEWS-  
STAND PRICE



# CARL GOLDBERG

## NEW! CG LOW BOUNCE WHEELS

With SHARP, CLEAN RIB TREADS  
and TOUGH, LONG-WEARING HUBS



From 1-13/16" Dia. on up, all wheels  
take standard brakes.

7 sizes — 1-3/8" to 3-1/8"

From \$1.89 to  
\$3.19 pr.

Tested and proven in the field by famous fliers, we believe you, too,  
will be well pleased by these very attractive new CG Low Bounce Wheels.  
Ask your dealer to show you the size you want!

## NEW! Spring Steel E-Z LINKS with 10" Rod

39¢ Each or 6 for \$2.25

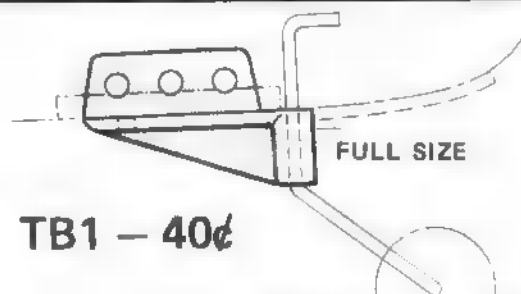
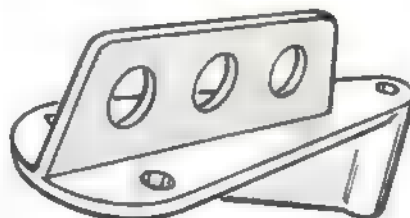
New E-Z LINKS not only save you money, but are made of spring steel  
and have quality threads that work smoothly without galling. The  
rod hardness is just right, too — not too soft.



E-Z LINK, complete with 10" Rod —  
EZ1 — 39¢ ea., 6 for \$2.25  
E-Z LINK, less rod — EZ2 — 2 for 59¢

Spare LINK RODS Strong, quality threaded rods  
to work in 2-56 clevis. Rod hardness just right.  
LR1 — 6 for 59¢

## NEW! Nylon TAILWHEEL BRACKET



TB1 — 40¢

The simplest tailwheel mounting bracket yet — just cut  
a slot in the rear bottom of the fuselage, smear epoxy  
on the glue fin, and slide it into place.

AVAILABLE IN CANADA

P.S. For best service, see your dealer for items you  
want. If not available, write direct; add \$5¢ per item  
(\$1 outside U.S.). Minimum order \$1.

**CARL GOLDBERG MODELS INC.**  
2545 WEST GERMAK ROAD • CHICAGO, ILLINOIS 60608

CARL GOLDBERG MODELS INC.  
2545 W. GermaK Rd., Chicago, Ill. 60608  
I am sending 20¢ for a 8 pg. Illustrated Catalog with "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment, and Radio Control Definitions.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_ ZIP \_\_\_\_\_



# 72 NATIONAL CHAMPIONSHIPS

## President's Memo



AMA President John Clemens presented Outstanding Service Award Plaques to the Navy Nats Project Officer, Lt. Cdr. Al Galmer (right) and his assistant, Lt. Cdr. Bob Needham.

This was SALUTE and THANKS YEAR to the NAVY, the 25th ANNIVERSARY of cooperation between the NAVY and AMA in providing a national level of competition in the field of model aviation.

It certainly looked like the modelers had caught the spirit, because just over 2,000 contestants and mechanics showed up! "Camper-and-Tent City" looked exactly that: a city. And most of these were whole families. If no spectators at all had shown up, the contestants alone would have made a good sized crowd, but the spectators DID show up. In fact, somewhere between 20,000 and 30,000 showed up on the final day just to see the AIR SHOW (held this year at a remote part of the field), and ALL MODEL AIRPLANES and the championship trophy awards. It was quite a success.

While mentioning the air show and the thousands who attended, I MUST COMPLIMENT those thousands for their orderliness and cooperation. I mention this because we

*Continued on page 23*



Top Flite Models and Dave Platt (L) have made a gift of Dave's famous Dauntless to the Pensacola Naval Air Museum. Accepting for the museum during a Nats ceremony was Blaikie (ctr.), Capt. Paul Merchant (R), NAS Glenview C.O., was another of the participants.



The last Navy Nats Airlift? Carrying many officials, press reps, thousands of pounds of Nats gear, this was the final '72 Nats departure for Texas and California.

## Thanks, AMA!

The general theme of the 1972 Nats was "Thanks, Navy!" This was in appreciation of 25 great years of Navy hosting of AMA's big annual event. It would not, however, have been a very good ending to the Navy program if the 1972 event had been unsuccessful. In order to say thanks in proper fashion, therefore, it was important that the '72 Nats be a great one.

It was, despite tremendous increases in AMA's physical and financial workload. In hosting this Nats, the Navy was unable to offer anywhere near the usual support of past events. The Navy did a lot, but it largely depended upon AMA to provide the people and money.

On the money end, it looks like we about broke even. Contestants and sponsors alike absorbed substantial increases in expenses. On the physical end, a near-miracle effort on the part of about 150 AMA workers made the '72 Nats an operating success. Not only were more contestants involved than before, but with generally fewer competition problems and complaints.

To those workers who made this possible the message from a grateful Nats management is: "Thanks, AMA—you made our thanks to the Navy a greater success than anyone had a right to expect."

Sincerely,  
John Worth  
AMA Executive Director

# Behind the Scenes...

The Incredible 1972 Nats! It survived one crisis after another. It was cancelled once (by the Navy), almost cancelled again (by AMA), then struggled through a series of near-panic situations involving personnel, supplies, equipment and other problems.

But it turned out to be a great Nats—not only bigger than last year's big meet but also a generally happy one. Over 2000 participants were registered; over 1400 contestants and more than 600 mechanics. Except for a day and a half the weather was great. Following several days of boiling hot temperatures immediately prior to the Nats, the weather suddenly cooled off with a day of rain, and this was followed by milder temperatures which held through the rest of Nats week.

But when the rains came on the first full day of Nats competition, the outlook seemed dim. Nats officials had just completed a week-end of backbreaking preparations (erecting two miles of snow fence for crowd control, marking circles and event areas on the runways, hauling and putting up tents, tables, chairs, and other Nats gear). This was followed by Nats registration, test flying, Indoor competition, and qualifications for RC Pylon Racing.

Then came the start of the full schedule on Nats Wednesday. Flying began but so did the raindrops—gently at first but building slowly. Up until noon the events managed despite the wet air, but by mid-afternoon many had quit as the rain got steadily heavier.

But most flyers persisted despite very cold and drenching conditions. Radio Control judges and Free Flight timers could hardly see, scoreboards smeared and blurred, models splashed when they hit the ground. Even so some Free Flyers scored "max" flights despite the terrible conditions.

The next day was windy in the morning as an aftermath of the rain, but there wasn't much waiting around for calmer weather. Unfortunately, the most weather sensitive event was scheduled during the wind—Free Flight Scale took a beating as flight after flight ended up in wreckage.

Otherwise, however, the Nats went booming along. RC Pattern flying operated with great efficiency to get in six rounds of qualifying despite the loss of time the day before. It was much the same in other events. Free Flight, using the 'time a flight, fly a flight' scheme for the first time at a Nats, operated very smoothly. Many flyers said that it was better than previous years even with the lack of 60 or more timers that the Navy had usually supplied.

Control Line had another sort of crisis. First the Nats CL Manager of many years, Pete Peters, was not able to attend the Nats. So the load fell on CL Director Gosta Johnson's shoulders. Then Gosta got called home on an emergency, and Control Line events were suddenly without an overall leader.

The Nats Executive Committee went into a huddle and picked Combat Director Murry Frank for the bigger job. He came through in fine fashion and so another Nats crisis was overcome. Once again it was a case of people managing to 'make do' in situations that happened despite the best laid plans.

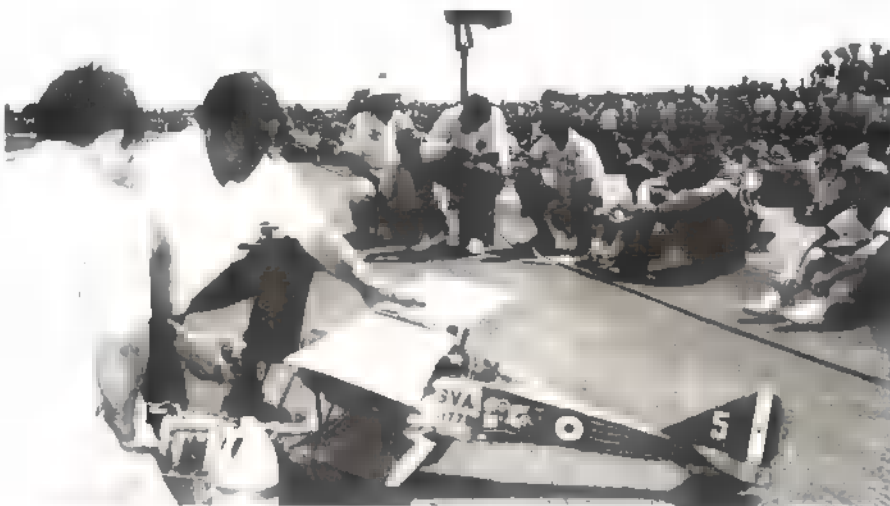


Rolling out the barrels for fence anchorage are AMA volunteers. Never before have AMA'ers been responsible for this kind of detail, but they did the job and ran the meet, too.

More than 2,000 Delta Darts — given away, built and flown during the '72 Nats. Nancy Penrod and Bernie Drummond are shown attaching wings and stabs with electric glue guns—to speed the flow of anxious youngsters. Jigs — a big aid in doing the job.



*Continued on page 22*



Big crowd at Sunday Model Air Show was orderly despite lack of a barrier. One of many exhibition flights — made by Josh Titus, shown here with RC Ansaldo SVAS.



Hangar confab at RC transmitter processing: Pylon Director Glen Spickler, left; overall RC Manager Kemp Bunting, right.



Al Algood — one of those who manned the spectrum analysers loaned by the Hewlett-Packard Company for frequency monitoring. Thanks to H-P and also to Midwest Model Products and McGee Displays, Inc., of Nashville, Tenn. Midwest provided fuel for FAI FF and RC Pylon events, and McGee supplied special transmitter processing decals.



Above: Could it be that commentator/modeller Paul Harvey said a funnier one than Johnny Clemens? Shown (L-R): Paul Harvey, Capt. Paul Merchant, Jack Ruth, Johnny Clemens, Earl Witt.

Left: AMA had some mighty attractive help for cleanup operations. Alice Fruit wields the broom as Carol Risko works the trash bag.

## BEHIND THE SCENES...

*Continued from page 21*

When, for example, the Navy had earlier indicated that military personnel would not be available to help AMA officials run the Nats, it had not been expected that the lack would be so complete. It was soon learned, however, that use of naval station personnel would be charged for, and therefore the cost of operating the Nats could go sky-high.

AMA officials, therefore, decided to go it alone, doing double and triple duty. They realized the necessity of showing that the Nats could be run with absolute minimum support in order to fan the faint sparks of hope that a minimum cost Nats might induce the Navy to keep the Nats going, although they previously had announced that this 25th year of Navy hosting would be the last.

Between the regular Nats officials working overtime and the help of many Chicago area AMA volunteers, the Nats went on successfully by substituting about 50 new AMA workers in place of over 150 Navy personnel in former years. These, plus the usual number of AMA officials, resulted in the Nats operating with about half the number of workers of past years—an 'above and beyond the line of duty' effort on the part of many.

This is not to say that the Navy was missing. Far from it. They provided equipment, housing, meals, basic garbage pickup, first aid, transportation, public affairs and other support. Two officers, Lt. Commanders Al Geimer and Bob Needham, together served in multiple capacities that had involved a dozen officers of past Nats. They solved many problems requiring AMA-Navy liaison, including the location, transportation, borrowing and procurement (paid for by AMA) of many items of meet needs, such as fencing, rope, electric power generators, signs, furniture, and lots more.

They also provided public relations support in place of the usual station effort to promote the Nats. They helped distribute Nats posters, promoted the Nats on TV and radio, even came up with a Miss Model Aviation after that usual Nats project had been dropped due to lack of time. They helped greatly to hold the Nats cost down by scrounging rather than buying or renting. When walkie-talkies were desperately needed for field communications, for example, they were able to borrow them from the Chicago Police Department. Likewise, they were able to borrow 12,000 feet of snow fencing. Commander Geimer even loaned two of his personal fans for the Nats headquarters operations, as well as his own bikes to Nats officials.

With these and other contributions the Navy did a lot despite severe restrictions. This, together with AMA absorbing a lot of cost items which had previously been provided by the Navy (such as rental of field sanitation facilities, airfield cleanup after the Nats, gas for vehicles, and pay for Navy truck drivers) made it possible for the 1972 Nats to be held.

It was reported earlier in the year that the Navy had cancelled participation in the '72 Nats due to budget reductions. This happened in March, but AMA got a reversal for one more year on the basis that the Navy would not have to foot the bill in the past. At the time it looked like the cost to AMA might be

*Continued on page 39*



## PRESIDENT'S MEMO

Continued from page 20

ran up against a unique problem that the spectators helped mightily in solving.

We found, suddenly, that there was not time with our volunteer help to establish the safety barricades or fences around the runway areas to be used for the multitude of flying demonstrations. An imaginary safety line was established with a few barrels as markers. Starting early with the public address system, as the crowd arrived, I pointed out to the folks the dangers of moving any closer than the imaginary line marked by the barrels. I pointed out that INTELLIGENT AMERICAN LADIES AND GENTLEMEN would know how to conduct themselves under these circumstances and would not only stay at the proper distance, but would also aid us in pointing out to the less polite and less wise that they should stay back also. The fact that this huge gathering did just as asked, with no fences or ropes, is a TREMENDOUS TRIBUTE to how AMERICANS can and will act when they stop and think—and are given a logical reason for acting. They even helped pick up litter in the area. As I told this fine assemblage of folks on the PA system, it sure made me proud to be an American!

While watching the crowd enjoy the air show, I also had a chance to watch the expressions of satisfaction and pride on the faces of our TWO MOST HONORED NAVY GUESTS. They also realized that we were witnessing a fine AMERICAN SPORTING ACTIVITY being enjoyed by a FINE AMERICAN CROWD being hosted aboard their U.S. NAVAL AIR STATION. These two gentlemen who added prestige to the giving of our top NATIONAL AWARDS were our hosts, the commanding officer of Glenview Naval Air Station, Captain Paul Merchant, and the Deputy Chief of Staff of Naval Air Reserve Training, Captain Richard Altmann.

Taking an interesting look at the other end of the week of Nats activity, I walked down to the main gate of N.A.S. Glenview just before it was opened to our AMA contestants. Cars, trailers and campers filled the parking lot outside the gate as well as the access road as far as the eye could see. At about 8 am the gate was opened, and, so help me, it looked like the chariot race scenes from Ben Hur! Everyone placed some sort of premium on being first at the registration desks. This is amusing because, honestly, there is no advantage in first, second or even twenty-fifth. But the vehicles poured through the gate like water through a hose, and I shot movies of it all. Since I am just not enough to find something amusing in nearly everything, I shot the film with a special camera that takes only one frame every half second. When shown on the screen at normal 18 frames per second, everything is "hurried-up." The result looks like the NATS was being held at the Indianapolis 500 instead of the dignified Glenview Naval Air Station. I wish all of you could see this film. But please slow down next year!

It made me proud that all the contestants coming through the gate smiled and waved when they realized that the president of AMA was there to greet them. AMA'ers are an awfully nice bunch of people!

John E. Clemens  
AMA President

## NATS ENTRIES

	Jr.	Sr.	Open	Total
No. of Entrants	240	268	955	1463
No. of Mechanics				630
<b>Entries by Event</b>				
<b>Indoor</b>	Jr.	Sr.	Open	Total
Scale	6	14	30	50
H.L. Glider	32	38	65	135
Paper Stick	17	13	34	64
Cabin	3	11	16	30
Stick	8	11	30	49
<b>Control Line</b>				
Scale Racing	36	34	97	167
Rat Racing	12	28	77	117
B Proto Speed	6	10	22	38
1/2 A Profile Proto	55			55
1/2 A Proto Speed	8	19	38	65
FAI Speed	8	7	17	32
1/2 A Speed	20	15	28	63
A Speed	14	11	31	56
B Speed	6	11	31	48
C Speed	9	6	31	46
Jet Speed	1	5	33	39
Aerobatics	11	28	77	116
Combat	19	61	135	215
FAI Team Race		1	16	17
Scale	12	10	22	44
Navy Carrier I				37
Navy Carrier II	3	11	39	53
Profile Carrier	10	33		97
<b>Radio Control</b>				
C Pattern Expert			84	92
C Pattern Novice	3	7	40	50
Pattern		4	22	46
A Pattern	6	11	43	60
AMA Scale		2	35	37
Pylon Formula I	2	8		99
Pylon FAI		3	51	54
<b>Free Flight</b>				
1/2 A Gas	69	75	171	315
A Gas	53	56	168	277
B Gas	14	22	105	141
C Gas	10	19	104	133
FAI Power			53	77
Wakefield Rubber	9	5	43	57
Unlimited Rubber	31	16	67	114
Coupe d'Hiver	12	10	70	92
Nordic Glider	41	34	100	175
H.L. Glider	96	81	148	325
Rocket Power	10	19	49	78
Scale Rubber	3	5	27	35
Scale Gas	3	6	34	43

## PERPETUAL TROPHIES & SPECIAL AWARDS

**MULVIHILL** (high time regardless of age, Unlimited Rubber): Philip Klintworth, Troy, Mich.

**TULSA GLUE DOBBERS** (high time regardless of age, Outdoor H.L. Glider): Paul Kosmala, Cheektowaga, N.Y.

**STOUT INDOOR** (high time regardless of age, Indoor Cabin): Bucky Servaites, Dayton, Ohio.

**TESTOR's** (best model finish, regardless of age): Ed Ellis, Dearborn, Mich.

**STOUT COMMERCIAL** (high time regardless of age, Indoor Stick): Clarence Mather, San Diego, Calif.

**DICK BLACK** (high time regardless of age, Coupe d'Hiver): George Perryman, Smyrna, Ga.

**STERLING MODELS** (most Scale static score of any category, qualifying by official flight): Claude McCullough, Montezuma, Iowa.

**DANNY BARTLEY** (Control Line Category Champion): Glenn Lee, Batavia, Ill.

**JIM WALKER** (winner of Junior-Senior-Open flyoff, CL stunt): Dennis Adamisin, Taylor, Mich.

## NATIONAL CHAMPIONS

**GRAND CHAMPION**  
Brian Webster, Manchester, Tenn.

**JUNIOR**  
Kenneth Bauer, Orange, Calif.

**SENIOR**  
Brian Webster, Manchester, Tenn.

**OPEN**  
Bucky Servaites, Dayton, Ohio

**RADIO CONTROL CATEGORY**  
Larry Leonard, Canoga Pk., Calif.

**SCALE CATEGORY**  
Frederick Stark, Florissant, Mo.

**INDOOR CATEGORY**  
James Richmond, Davidson, N.C.

**FREE FLIGHT CATEGORY**  
Robert Watson, Morton Grove, Ill.

**CONTROL LINE CATEGORY**  
Glenn Lee, Batavia, Ill.

**AMA CLUB TEAM**  
Chicago Aeronuts (Mark Kummerow, Keith Gordey, Charles Markos, Charles Sotich, Robert Watson)

**NATS TEAM**  
Dixie Whiz Kids (Mary Lou Brown, Charles Schubert, Brian Webster, Dennis McGraw, Brian Pardue)

## 1972 NATS SPONSORS

Some of the basic meet expenses and approximately 600 competition awards were provided through the contributions of the following:

Ace R/C, Inc., Aero Sports/Nitrotane, Al's Hobby Shop, Ambroid Company, Inc., American Aircraft Modeler, Aristo-Craft, Competition Models, Inc., Dremel Manufacturing Co., Dumas Products.

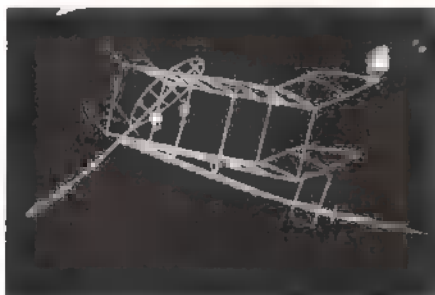
E.K. Products, Inc., Fagel Bros., Flying Models Magazine, Fox Motors, Carl Goldberg Models, Inc., Grish Brothers, Paul K. Guillow, Inc., Heath Company, Hobby Industry Assn. of Delaware Valley, International Balsa Corp., Jasco, Jetco Models, K&B Manufacturing Corp., Kraft Systems, Inc.

L.M. Cox Manufacturing Co., Inc., Midwest Model Supply, Midwest Products, Mini-Flite Co., The Model Builder Magazine, Model Materials Co., Model Rectifier Corporation, Montgomery Signs, Northfield-Ross Engines, Paetra Industries, Inc., Pettit-Hobbypoxy, Progress Manufacturing Co.

R/C Modeler Magazine, Russell, Marsh & Kennedy, Inc., Warren Shea, Sig Manufacturing Co., Inc., Stanton Hobby Shop, Inc., Sterling Models, Inc., Sullivan Products, Inc., Tatone Products, The Testor Corporation, Top Flite Models, Inc., Williams Brothers, World Engines, Inc.



An outstanding example of traditional stick-and-tissue construction, this rubber-powered Vought OS2U Kingfisher, built by Michael Kuehne, flew in the Indoor Navy Scale event.



Unusual microfilm biplane model by Clarence Mather.

Susan Weisenbach's rubber job heading aloft.



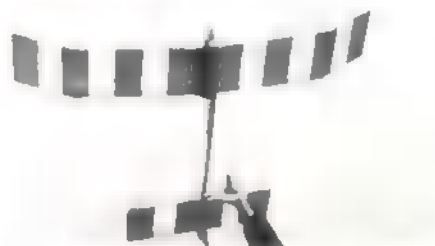
Team Cailliau makes a pit stop. Lawrence took second with his simply constructed Pennyplane.

Pat Wood, 15, begins a flight with his scaled version of a Pilatus Porter from AAM plans. He also flew this model in outdoor Scale.



Charles Wiese's Rocket-Power event entry powered by Jetex 150.

Diesel-powered, scale SE-5A by Francis Kastory.



Three seconds after this photo was snapped, the screaming Supertigre 23 pulled the rain soaked wings off of George Versaw's Starduster 600.

Winning Outdoor Flying Scale, Waco YK5-6 by Harold (Bill) Warner features opening doors, complete interior—even maps in the map pockets.



Indoor: It is no surprise to see Richmond, Mather, Sotich, Servaites and Rohrbaugh on the winners list, but two new names have appeared: Larry Cailliau and Dennis Jaecks. Dennis, a convert from RC, won the increasingly popular Pennyplane event in 1971 and won again this year with an even better time of 12 min. 25 sec., phenomenal for this severely restricted event. He later placed fourth in the Microfilm Stick event. Larry, returning to modeling after an eight year time-out for college, marriage, and the early years of a career as a TWA pilot, placed second in Pennyplane and Hand-Launch Glider, and first in Paper Stick, breaking Jim Richmond's long-standing record by more than a minute.

There is a man at the Nats indoor events every year whose absence would spell disaster, yet his name never appears on the list of winners or the officials roster. He is "Major" Brown, custodian of the armory. He lowers the lamp when a rubber-powered model becomes snared by one, and jostles the hand-launch gliders loose when they alight on the rafters.

In one corner of the armory a free-balloon duration contest between Bill Bigge and John Thornhill was taking place. Helium-filled balloons were weighted with clay until they would rise slowly. Then after a few minutes enough helium seeped out to cause the balloon to descend. Hitting the ceiling disqualified the flight.

Fulton Hungerford, whose tiny Ford Trimotor stole the show at the 71 Nats, did a repeat performance this time with his Boeing 80-A1 trimotor. All three motors rubber-powered, the props of the wing-mounted motors being driven through flexible shafts by rubber motors contained within the wing.

Al Rohrbaugh entered the only microfilm stick model built to the 300 sq. in. wing area limit. The 51 in. Nordic-like wing was pulled by a huge 27-in. prop which cruised at only 32 rpm. A disastrous collision with a lamp support prevented the model from exhibiting its true potential.

The Nats Hangar had its usual miscellany—rows of workbenches used for storing and working on models, and sleeping on or under; models under construction, few of which were completed by the end of the week; a committee of six assembling a stick-and-tissue scale model from a kit; people selling and swapping everything from old model mags to new engines; the scale cage and the model shop; hordes scanning the results posted on the bulletin boards. This year a new feature was added in the person of Bezin flying his rubber-powered helicopters all over the place, talking a blue streak, surrounded by an ever-changing mob of kids, and selling completed stick-and-tissue copters for two or three bucks, scarcely two alike. Why? To clear out his basement to make room for building more copters!

On Wednesday, the first day of the outdoor competition, the weather started off bad and got worse as the day wore on. The wind was strong, and it



## FREE FLIGHT OUTDOOR

### 1/2 A GAS

Junior	Seconds
1. Flaxen Johnson	662
2. Bruce Pallet	445
3. Richard Faranda	437
4. Tim Rounsaville	427
5. Peter Brown	418

Senior	Seconds
1. Charles Wiese	483
2. Wm. Burgess, Jr.	458
3. Glenn Watson	436
4. Mark Kummerow	424
5. Larry McFarland	422
6. Mark Kulas	422

Open	Seconds
1. Mark Heller	803
2. Ronald Britzke	777
3. Eugene Wald	770
4. Willard Smitz	679
5. Bill Haught	649

### A GAS

Junior	Seconds
1. Gerald Comp	603
2. Kenneth Bauer	602
3. Mark Munger	535
4. Joseph Mekina	472
5. Flaxen Johnson	457

Senior	Seconds
1. Greg Fortin	790
2. Larry McFarland	540
3. Grady Turner	540
4. John Jerabek	514
5. Lee Lieber	498

Open	Seconds
1. Hercules Faranda	996
2. Andy DeMello	830
3. Raymond Johnson	823
4. Dennis Kargol	811
5. George Hillard	782

### B GAS

Junior	Seconds
1. Dan Lang	352
2. Joseph Mekina	329
3. Darrin Mathews	318
4. Gary Cain	275
5. William Schlarb	198

Senior	Seconds
1. Wm. Burgess, Jr.	527
2. Grady Turner	513
3. Mark Kummerow	429
4. Larry McFarland	429
5. John White	394

Open	Seconds
1. Rudy Kluber	697
2. William Burgess	683
3. Glenn Schautz	632
4. George Versaw	540
4. John Pfeifer	540

### C GAS

Junior	Seconds
1. William Schlarb	452
2. Darrin Mathews	234
3. Steven Schmeizer	191
4. Wayne Friebs	175
5. Dan Lang	116

Senior	Seconds
1. Mark Kummerow	514
2. Wm. Burgess, Jr.	481
3. Grady Turner	444
4. Lee Lieber	414
5. Jeffrey Nix	399

Open	Seconds
1. Richard Bloomquist	795
2. Gerald Comp	787
3. Paul Kosmala	733
4. Sal Taibi	720
5. Raymond Johnson	684

### FAI POWER

Junior	Seconds
1. Wayne Friebs	369

2. Darrin Mathews	358
3. Wm. Schlarb, Jr.	337
4. Fritz Curth, Jr.	309

Senior	Seconds
1. Brian Webster	833
2. Robert Dunham II	710
3. Jim Haught	625
4. Wm. Burgess, Jr.	625
5. Greg Fortin	591

Open	Seconds
1. Brian Eggleston	1075
2. Denny Dock	893
3. George Versaw	883
4. Billy Chenault	862
5. Joseph Beton	856

### ROCKET POWER

Junior	Seconds
1. Robert Lyons	437
2. Kurt Burner	193
3. James Bayly	113
4. Kevin Renshaw	105
5. James Bartels	104

Senior	Seconds
1. Charles Wiese	447
2. Paul Shailor	329
3. Jim Haught	266
4. Cindy Beardsley	253
5. Bill Reuter, Jr.	218

Open	Seconds
1. William Jenkins	454
2. Martin Richardson	445
3. Charles Sotich	430
4. Don Chancey	421
5. Michael Thompson	345

### WAKEFIELD RUBBER

Junior	Seconds
1. Chris Watters	701
2. Scott Matteson	559
3. Keith Gordey	559
4. Darrin Mathews	432
5. A. Bennett, Jr.	380

Senior	Seconds
1. Peter Lewis	727
2. David Wypych	469
3. Robert Dunham II	358
4. Michael Kuehne	336

Open	Seconds
1. Willard Smitz	879
2. Cameron Ackerly	869
3. Jack McGillivray	847
4. Phillip Kilntworth	814
5. Joseph Macay	752

### COUPE D'HIVER RUB.

Jr.-Sr.	Seconds
1. Michael Kuehne	514
2. Gregory Simon	467
3. Richard MacCleery	457
4. Charles Wiese	433
5. Scott Matteson	426

Open	Seconds
1. George Perryman	729
2. Bucky Servaites	563
3. Jeff Annis	549
4. Charles Schobloher	535
5. Donald Wright	534

### UNLIMITED RUBBER

Junior	Seconds
1. Kenneth Bauer	720
2. Keith Gordey	630
3. Chris Watters	500
4. Fritz Curth	452
5. Scott Matteson	437

Senior	Seconds
1. Robert Dunham II	520
2. David Wypych	458
3. Peter Lewis	263
4. John Jerabek	217
5. Gregory Simon	126

Open	Seconds
1. Philip Kilntworth	1980
2. George Perryman	1810
3. Charles Sotich	1046
4. Robert Watson	1005
5. Joe Macay	991

### NORDIC GLIDER

A-1 Junior	Seconds
1. George Bennett	294
2. James Bayly	274

3. Barry Pallet	260
4. Dan Morton	257
5. Andrew Bennett	251

A-2 Junior	Seconds
1. Mark Coates	449
2. Wayne Friebs	448
3. Dennis Stainbrook	438
4. Mark Munger	435
5. Darrin Mathews	359

A-1/A-2 Senior	Seconds
1. Brian Webster	674
2. Richard MacCleery	670
3. John Lorbiecki	612
4. Gregory Simon	589
5. Michael Kuehne	559

A-1/A-2 Open	Seconds
1. Peter Allnutt	720
2. Robert Watson	654
3. Robert Mattes	631
4. Andy DeMello	613
5. George Lewis	605

### H. L. GLIDER

Junior	Seconds
1. Joseph Mekina	296
2. Scott Matteson	241
3. Tom Wilson, Jr.	240
4. J. Dougherty, Jr.	239
5. William Schlarb	226

Senior	Seconds
1. Larry McFarland	350
2. Robert Dunham II	286
3. Mark Kummerow	281
4. Jeffery Nix	278
5. William Shailor	278

Open	Seconds
1. Paul Kosmala	631
2. Dana McKinzie	625
3. Bucky Servaites	520
4. Robert Hallum	353
5. Gerald Comp	337

### INDOOR

#### CABIN

Junior	Min/Sec
1. R. Whitten	4:49.4
2. Wm. Wood, Jr.	3:46.0
3. Wm. Schlarb	2:59.2

Senior	Min/Sec
1. Tom Sova	14:41.0
2. Gregory Simon	13:19.4
3. M. Kuehne	11:13.0
4. Ronald Ganser	9:01.2
5. R. Dunham II	9:00.6

Open	Min/Sec
1. B. Servaites	22:11.8
2. J. Richmond	21:41.6
3. Al Rohrbaugh	19:40.6
4. Wayne Zink	14:31.4
5. C. Sotich	12:11.0

#### STICK

Junior	Min/Sec
1. Gordon Clark	13:01.2
2. S. Wisniewski	12:13.2
3. J. Hardcastle	10:43.6
4. Jimmy Clem	10:14.4
5. Wm. Schlarb	9:33.2

Senior	Min/Sec
1. Wm. Shailor	23:04.0
2. Tom Sova	22:15.2
3. Richard Doig	18:32.0
4. Ronald Ganser	17:03.8
5. R. Dunham II	16:35.0

Open	Min/Sec
1. C. Mather	30:00.0
2. J. Richmond	28:50.6
3. Al Rohrbaugh	27:28.6
4. Dennis Jaacks	26:23.4
5. G. Graunke	23:56.2

### PAPER STICK

Junior	Min/Sec
1. S. Wisniewski	11:41.0
2. Bruce Pallet	10:47.0
3. Jimmy Clem	10:10.0
4. J. Hardcastle	9:56.6
5. Barry Pallet	9:55.0

Senior	Min/Sec
1. Tom Sova	19:34.2
2. R. Dunham II	17:03.8

3. Ronald Ganser	16:13.2
4. Wm. Shailor	12:25.0
5. Gregory Simon	11:38.2

Open	Min/Sec
1. L. Cailliau	23:19.0
2. Dennis Jaacks	21:06.0
3. J. Richmond	20:34.8
4. C. Mather	19:11.6
5. C. Sotich	18:30.6

### H.L. GLIDER

Junior	Seconds
1. Jeffery Tillou	96.6
2. Wm. Schlarb	93.3
3. S. Wisniewski	86.2
4. Barry Pallet	85.8
5. Kenneth Bauer	82.9

Senior	Seconds
1. Charles Wiese	115.3
2. Ronald Ganser	110.8
3. R. Dunham II	109.6
4. Peter Lewis	109.2
5. Brian Pardue	106.0

Open	Seconds
1. Rudy Kluber	127.0
2. L. Cailliau	121.0
3. Don Chancey	117.5
4. Bucky Servaites	116.0
5. Robert Watson	115.0

### SCALE

#### OUTDOOR FF GAS

Jr.-Sr.	Points
1. Darrin Mathews Loening M-8	288

Open	Points
1. Harold Warner Waco WKS-6	518
2. Frederick Stark R.E.P. "K"	486
3. Andrew MacIssac American Eagle Eaglet	307
4. William Wargo Douglas O46-A	302
5. William Bell S.E. 5A	

#### OUTDOOR FF RUBBER

Jr.-Sr.	No Qualifiers
---------	---------------

Open	Points
1. Frederick Stark Mr. Mulligan	105.5
2. Richard Bruning Phillips Aerower	101.9
3. George Lewis Pilatus Pc-6 Porter	
4. Ralph Kuenz Folkers SK-2	
5. Andrew MacIssac Fairchild PT-19	

### INDOOR

Junior	Points
1. William Wood	100.00
2. Barry Pallet	92.00
3. S. Wisniewski	82.00
4. Bruce Pallet Turbo-Porter	

Senior	Points
1. Mark Kummerow	130.00
2. Brian Webster Fokker EIII	105.83
3. Michael Kuehne Pietenpol	103.67
4. Patrick Wood	54.00
5. Michael Joerms Dornier DO 335	51.33

Open	Points
1. Frederick Stark OH 29	146.67
2. Charles Markos	130.00
3. Don Garafalow	124.33
4. Clarence Mather Stormovik	124.33
5. Bucky Servaites	118.00
6. 1911 Cessna	



Peanut Scale models — limited to a 13-in. wingspan and fly about a minute. Richard Whitten, editor of "Star Skippers" newsletter for Juniors, built this Pietenpol Air-Camper from a Peck-Polymers kit.



Launching his hand-built glider is James H. Harris.

A familiar sight at the Model Airplane Championships for seven years is the sister team of Cheryl (left) and Susan Weisenbach. Susan, 20, was the 1966 Nats Grand Champion which earned her a trip to the Naval Flight Academy at Pensacola, Florida, and a college scholarship provided by the Academy of Model Aeronautics. Cheryl, 18, specializes in FF scale models of WW I biplanes.



Neil Miller and husband Carl patch their Puss Moth rubber-powered free flight. The Millers are veterans of Nationals competition since 1954.

Terry (left) and Mike Kuehne have flown in model events for over ten years, specializing in FF gas events. Shown setting a timer for a two-min. flight.



The Linstrums, Mindy and Jennie, display their Pennyplanes. Popular with both tenderfoots and oldtimers, event drew 48 entries.

National Free Flight Society Executive Director Hardy Brodersen adjusts his Rossi 15 to around 24,000 rpm, pegging the light-beam tachometer built into his goodie-box which also contains an electric starter. ■ fast climber.



was between a drizzle and a real rain all afternoon. Max flights didn't come easy. By 2 p.m., when the rain started in earnest, only four max flights had been posted on the Open A/2 glider scoreboard, many of the contestants hoping for better weather which never came. Peter Allnutt, flying his rather soggy and tired-looking Adagio No. 6 won the Towline Glider event for the third time in four years.

Weather that bad couldn't get any way but better. And it got a little better each day—Saturday and Sunday had some of the best weather ever seen at a Glenview Nats.

Bruce Mathews, flying a replica of the Loening M4 with which Tom Stark won the Open Outdoor Flying Scale Gas event three times, came as close to tears as a young man would like to admit when, on the third of his allowed four attempts, his flight was 1/2-sec. short of the required 20 sec. He made it on his last attempt, however, and won in the Junior-Senior age group.

Harold (Bill) Warner included fishing, test flying, model building, and the Nats in a month-long Volks-van tour. While he was test flying in Iowa, the longest and best flight of his Peanut Scale ended with a dunk in the settling pond of a sewage disposal plant, and it hasn't flown the same since. Harold got even with the world by winning the Outdoor Scale Gas-Powered event with a Waco YKS-6 cabin biplane having doors and a complete interior.

Unlimited Rubber Powered: With the historic Mulvihill trophy as bait, the Unlimited Rubber marathon brought out the usual assemblage of top-notch rubber modelers. By noon it was clear that it would be a battle between Phil Klintworth and George Perryman, who has come within shooting distance of the Mulvihill a dozen times. Klintworth was following behind Perryman by about two flights when on its eleventh flight the stabilizer on Perryman's model was knocked out of alignment and the model destroyed itself. Klintworth flew his eleventh successfully to qualify for having his name engraved beside those of the other aeromodeling greats, and it is good that it ended then for his winding arm was tiring. George consoled himself by winning the Coupe D'Hiver event on the following day.

Toronto's Andy deMello established an early lead in Class A Gas flying his Cox 15-powered Half Nog to four maxes. Red Johnson, from Southern California only got a 3-1/2 sec. engine run on his fifth flight—his pen bladder fuel tank burst in flight. Hercules Farand, however, posted five maxes +96 sec. to win. Greg Forth, posted a creditable four maxes +70 sec. to win in Senior.

The unofficial Old-Timer events drew a nostalgic array of Zippers, Bombshells, Brooklyn Dodgers, Playboys, Korda Wakefields, Gollywocks, and even a pair of twin pushers. The gentle drone of spark-ignition engines and the smell of gasoline and castor oil brought back memories of the Genesis of Free-Flight Gas in the mid-thirties when models flew more like "real" air-

planes instead of the rocket-boosted gliders they have evolved into.

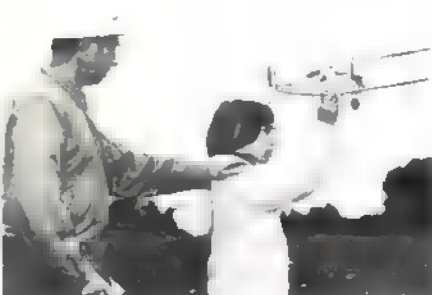
**FAI Power:** Harold Eggleston of Toronto put up his five three-min. maxes, blew his fourth flight by dethermalizing early, and disgustedly left for home, not realizing that despite the seemingly ideal weather, no others would better his mark. With 55-min. of the day's flying remaining, Danny Lock roared up to begin the nearly impossible job of putting up his five flights. But he did just that, including one "attempt" when his engine flamed out upon launching and dived into the concrete, requiring a quick prop change and re-fueling. With only a minute remaining, he put up his fifth flight to complete the string of maxes and near maxes which earned him the second-place trophy.

Saturday was perfect hand-launch glider weather, with moderate drift straight along the runway. By early afternoon, Dick Mathis had posted four consecutive two-min. maxes, plus a flight of 1:39. Bucky Servaites, in a position to beat Mathis, went up into a cloud of other HLGs and Coupes in what seemed like good air, but was down in 40 sec. Later Paul Kosmala, flying an aft-rudder design by Bill Patton, and Dana McKinzie made their fifth maxes, hit holes on their sixth flights, and emerged first and second only six sec. apart. Mathis's third place was denied him because of a protest about his taking more than the allotted three-min. to launch his glider, although dozens of others did also—perhaps the price of being a well-known figure by virtue of previous successes.

Mark Kummerow was sure that his third flight in Senior C-Gas, a three-min. max, had put him into first place, but with less than an hour of the contest remaining and his model packed away, he discovered that his last flight had not been recorded. But after a long search, his timer was found and his max properly recorded. Mark's second flight dethermalized into the grass only 200 ft. from where he had launched it.

**Rocket Power:** With a surprisingly large turnout for an event which is so difficult to fly, the Rocket-Power event proved that the contest isn't over until everyone has finished flying, for first place changed hands often. Dave Chancey put up a mediocre 61-sec. flight followed by two three-min. maxes. Charlie Sotich maxed, crashed on his second flight, then made a 70-sec. flight followed by a max using his 1967 Nats winning model. Later Martin Richardson maxed on his third flight, which put him on top, only to be beaten by William Jenkins who also maxed on his third. Jenkins's win ended a week of bad luck which included crashing his 1/2 A Gas Model into a parked car, and having his hand-launched glider mashed by another HLG while it was in the trunk of his car.

Meanwhile, Charlie Wiese won in the Senior age class with a score that would have been good enough for second place in the Open age class, while Robert Lyons won in Junior, flying an all-balsa model he and his father had designed.



Lee Taylor instructs his son, Bradley, 11, on the important techniques needed to launch his DeHavilland 4, WW I British bomber.



Charles Puckett attempts to fire up his 020-powered Cargo model during Wednesday's downpour. The game is to carry maximum weight for 40 sec. with only a 20-sec. engine run.

Jack Pfeifer test flies the Nig Nog for Class B Free Flight.



Despite more recent successes in modeling, Sal Taibi gets big jollies out of flying his Forster 29-powered Pacer, designed in the late thirties. Sal even drove an old-timer car to the Nats from Los Angeles: a Chevy with 335,000 on the odom. He's trying for half a million.

Flying his B-Gas Starduster in the Wednesday afternoon rain, George Versaw had his hot Supertigre 23 flame out just after launching. The model came to a dead stop ten ft. off the ground, the engine caught and the model made a second vertical takeoff. But, his troubles weren't over yet, for seconds later, with the model going straight up at a tremendous speed, the two halves of the water-soaked wings parted company.



With rain pelting the model, Edward W. Mate, Jr., seven-years-old, launches tissue-covered Nordic for his dad, Edward Sr.

A top contender in Scale Free Flight, Bill Fort launches his Rearwind Speedster. Powered by a Cox 049 glow plug engine, the airplane is an exact scale model of a popular light plane that "barnstormed" in the 1935-37 era.



Bill Gough's novel pusher whatever-it-is flew well, stable and efficient. Pennyplane rules promote unusual solutions.

Nan Taibi holds a wind streamer for husband Sal. Here Sal is getting his Payload Free Flight model ready.



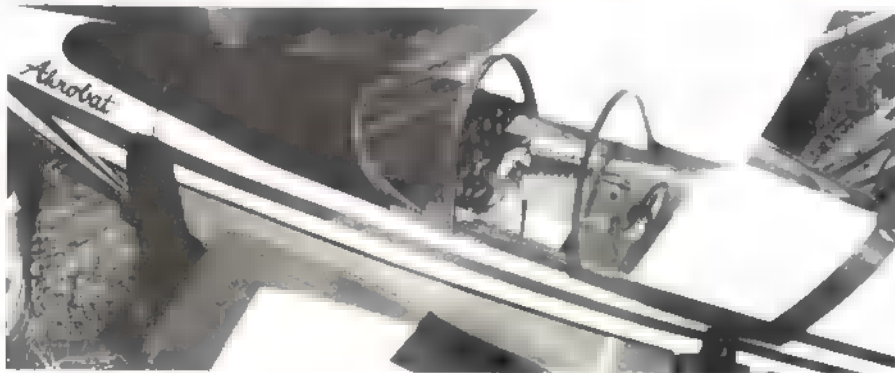


Bob Smith's T-2A designed by Tom Atkins. Bob will kit this ship. Notice the drooped aileron. Ship has coupled ailerons/flaps. Works very well.



Ralph Jackson beside his Weindecker Eagle. Retracts to be added for next meet. All plastic real plane very suitable for modeling in scale. No rivets ■ joint lines.

Don Botteron's "paint brush" special, Akrobat, painted with a brush believe ■ or not.



Claude McCullough's very nice Shinn. Notice the detailing.



RC at the '72 Nats was many things for many people. For some it was joy—making the finals in Class C or Formula I or FAI Pylon and for many more others failing to do the same. Winners are always happy; losers, some bitter, some expect it, some shrug it off, wait till next year! But the name of the game, in no matter what kind of competition, is winning! All strive for victory—some more than others—and tremendous preparation is in evidence everywhere!

Preparation achieves, but what about Lady Luck? It struck down almost randomly: Jim Whitley and Jim Kirkland due to an unfortunate frequency mix-up; Whit Stockwell and John Agee plus two others due to mid-air collisions; Bob Smith with the fastest qualifying time in Formula I racing dropped out of the finals due to equipment problems; Telford and Violet with the fastest FAI racing qualifying times were also struck down in the finals by engine and other problems.

Misfortune is very unforgiving as there is not much room these days for error; one missed pylon heat or pattern flight can change the whole picture. Some were able to rise above misfortune: Whitley finished second in C Pattern with a ship he had never before flown, borrowed from Ed Keck; Jim Kirkland with an airplane borrowed from Rhett Miller also never flown before by Jim; John Agee rose from the ashes of a mid-air and made the Class C finals with ■ borrowed airplane test flown in the rain!

RC at the '72 Nats was flown in conditions ranging from absolutely miserable hot and humid weather, to cool and very wet, to perfectly beautiful, sunny and calm. Something for everybody. I had never flown competition in the rain before, but I sure did this year. Two flights in the driving rain. It sure is hard to see that airplane with the rain beating in your face! Equipment operation was fantastic, until a drop of water got in the wrong place—just ask George Hill! "Fair weather" George was surviving okay, until his ship did an uncommanded 90° turn, whereupon George shook the water out of his transmitter and continued with "come back here you...!"

Have you ever flown in ■ strong crosswind? Well, always expect it in Chicago at Glenview. Crosswind is S.O.P. and he who has not practiced under these conditions won't do so well. Evidence of experience under these conditions was present in the high finishers in Class C Pattern. The old rudder really gets a workout under crosswind conditions!

Classes A and ■ were flown for a half day only (to the chagrin of the A and B fliers) under ideal conditions. Time was available for only three flights each—very unfortunate since Class C fliers had six qualifying flights plus six more to each of the top 20 qualifiers. Classes A and B were won by two youngsters whom I had the opportunity to judge. Young Steve Brooke, son of twice International Champion Ralph

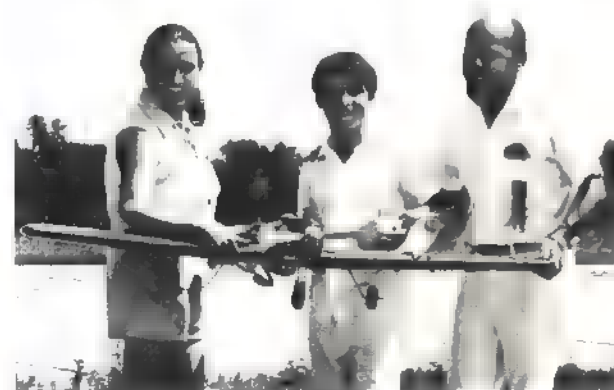


Charley Kenney oil from The Pathfinder.

An uncomplicated Ryan M-1 maliplane ready to start.



The "Doc" Brookes family. Young 12-year-old Steve won Class A with some very impressive flying of his Kaos. Powered by HP 60 and controlled by Pro-Line. Steve has been flying RC two years and won his first contest a year ago.



## RADIO CONTROL

### A PATTERN

Jr.-Sr.-Op.	Points
1. Steve Brooke	391
2. Robert Platteter	365
3. Donald Gutridge	364
4. Reuben Tyson	358
5. Gary Anderson	356

Best Junior  
Steve Brooke  
Best Senior  
Robert Platteter

### C PATTERN QUALIFYING-EXPERT

Jr.-Sr.-Op.	Points
1. Ron Chidgey	463
2. Jim Whitley	454
3. Norm Page	452
4. Lew Penrod	448
5. Phil Kraft	441
6. Tony Bonetti	438
7. Jim Martin	431
8. Steve Helms	430
9. Joe Bridi	429
10. Steve Buck	428
11. Jim Kirkland	426
12. Ralph Brooke	424
13. Don Coleman	422
14. Ted White	421
15. Dave Brown	417
16. Ed Hotelling	416
17. Larry Leonard	405
18. Don Lowe	401
19. Martin Barry	400
20. John Agee	396

### PYLON FORMULA I

Jr.-Sr.-Op.	Points
1. Cliff Weirick	20
2. Larry Leonard	18
3. Harold Coleson	18
4. D. C. May	17
5. Terry Prather	16
6. Kent Nogy	16
7. Doug Spreng	13
8. Tom Baker	13
9. Ed Hotelling	13
10. Telford/Violet	13
11. Dan McCan	12
12. Charles Funderbunk	12
13. Harold deBolt	10
14. Chuck Smith	■
15. Richard Brickert	7
16. Jeff Bertken	2
17. Bob Reuther	2
18. Mike Barna	-
19. Bob Smith	-
20. Jerry Wagner	-
Junior	
Bruce Richmond	
Senior	
Richard Brickert	

### C PATTERN FINALS-EXPERT

Jr.-Sr.-Op.	Points
1. Ron Chidgey	855
2. Jim Whitley	845
3. Don Coleman	840
4. Norm Page	831
5. Jim Kirkland	822
6. Phil Kraft	816
7. Jim Martin	814
8. Lew Penrod	813
9. Steve Helms	809
10. Tony Bonetti	■
11. Steve Buck	807
12. Ralph Brooke	806
13. Ted White	806
14. Dave Brown	804
15. Joe Bridi	786
16. Don Lowe	782
17. Larry Leonard	775
18. Martin Barry	763
19. Ed Hotelling	762
20. John Agee	758

### PYLON FAI

Jr.-Sr.-Op.	Points
1. Gary Korpi	19
2. Terry Prather	18
3. Chuck Smith	16
4. Pete ■	16
5. Upton	16
6. Tom Baker	15
7. Harold deBolt	15
8. Ron Schorr	12
9. Telford/Violet	11
10. Larry Leonard	11
11. Maurice Phillips	10
12. Robert Root	10
13. Smith	9
14. Bob Reuther	■
15. Richard Davis	8
16. Jeff Bertken	6
17. Harold Coleson	5
18. Whit Stockwell	4
19. Jack Stafford	2
20. Basil Derrough	2
Best Senior	
Whit Stockwell	

### C PATTERN-NOVICE

Jr.-Sr.-Op.	Points
1. Ed Hotelling	416
2. Rhett Miller	378
3. Kim Johnson	371
4. Don Sobbe	357
5. Ernie Weiss	355
Best C/N-E Junior	
Rhett Miller	
Best C/N-E Senior	
Steve Ellison	

### B PATTERN

Jr.-Sr.-Op.	Points
1. Ellis Newkirk	370
2. Mark Smith	344
3. Jack Poppenhager	334
4. Leland Peterson	312
5. Joseph Hildreth	304
Best Senior	
Ellis Newkirk	

## SCALE

### RADIO CONTROL

Jr.-Sr.-Op.	Points
1. Bud Nosen	16208
Douglas A-1H Skyraider	
2. Walt Moucha	15612
Fly Baby	
3. Edward Ellis	15298
Ryan M-1	
4. Don Botteron	14605
Ziin Akrobat	
5. Ralph Jackson	14145
Windecker Eagle	
Best Flight Achievement	
Tom Cook	
Best Senior	
Bill Hiller	



■ very rainy day during pattern prelims. Flying in the rain ain't much fun, but fly we did. Ed and Louise Izzo ■ their thing.



Jimmy Grier gets his "kicks" out of a Norm Page Mach 1 these days. Jimmy is always a tough competitor.

Young Rhett Miller, only 14-years-old, came within a whisker of qualifying for Class C top 20! A Kirkland-designed Intruder.



Jim Bonanno's replica of the WW II German Stuka JU-87 diver bomber.

Bill Bertrand surprised everyone with a new ship—a Handley Page bomber. It was a handful to fly!



Brooke, took Class A Pattern in impressive fashion. This youngster has been flying RC for only two years and flew in his first meet just one year ago. The boy's technique, presentation and execution of maneuvers was far beyond his tender years. Also Ellis Newkirk from Nashville, winner of Class B, had all the style and skill of many oldsters. You can certainly expect a lot from these boys as they move into the advanced classes! Let's also mention 14-year-old Rhett Miller from Tallahassee, Florida. This boy placed second in Class C Novice and almost made the finals in Class C. He has been flying competition for only two years with two wins and a second in Class A, two wins in Class B, and two wins in Class C/D. Except for engine problems in two qualifying flights, Rhett would have been flying in the top 20 Class C finals at the Nats!

What is a Nats without "Goldie" Goldclank doing his thing in Pattern and Pylon? This guy won't admit it and rarely shows it, but he is really a very good flier. Goldie's thing is not winning but having a good time in his own fashion and entertaining the crowd with his original (and unrecognizable?) maneuvers. Fun and laughter is Goldie's reward—too bad more of us can't be satisfied with that!

Horror of horrors, a Nats without Bill Bertrand's perennial monster scale Fokker D-7? Bill showed up this year with a four-engine (count 'em) scale Handley Page biplane bomber, and it flew—precariouly. Why must it be that Scale is fraught with near-disaster in flying most of these fabulous creations? I strongly contend that we are placing too much emphasis on scale and not enough on flying. It takes one to two years to build a competitive scale ship and five seconds to wipe it out! This happened to several at this Nats. I don't have a final count, but many were damaged or lost including two beautiful Ray STs by young Bill and Jim Hiller—months of work down the drain!

Stand-off Scale, here we come! Rarely have I witnessed a good scale-like flight in RC Scale and I didn't see one this year. An interesting sidelight in Scale: Fred Stark placed only 19th in RC Scale with a cute McDonald Doodlebug, but he was Scale category champion with firsts in Indoor Rubber Scale, Outdoor Rubber Scale, Navy Rubber Scale, second in Outdoor Gas Scale and 19th in RC Scale—now there is what I would call a Scale enthusiast!

What about design and trends? Most Pattern ships seen at the Nats were fast and sleek, complete with super engines and retracts. Phil Kraft tried to turn back the clock with his famous Kwik-Fli III and placed sixth. The fast aircraft definitely had an advantage in the windy weather conditions that prevailed during the prelims. However, slower ships such as Steve Brooke's Kaos looked very good in the calm air Sunday morning.

All Class C finalists had retracts as well as "honking" engines. Probably the fastest was Jim Martin's Banshee pro-

pelled by an H.P. (Hot Pants) 60. Would you believe a mile-high top hat? (Well, almost.)

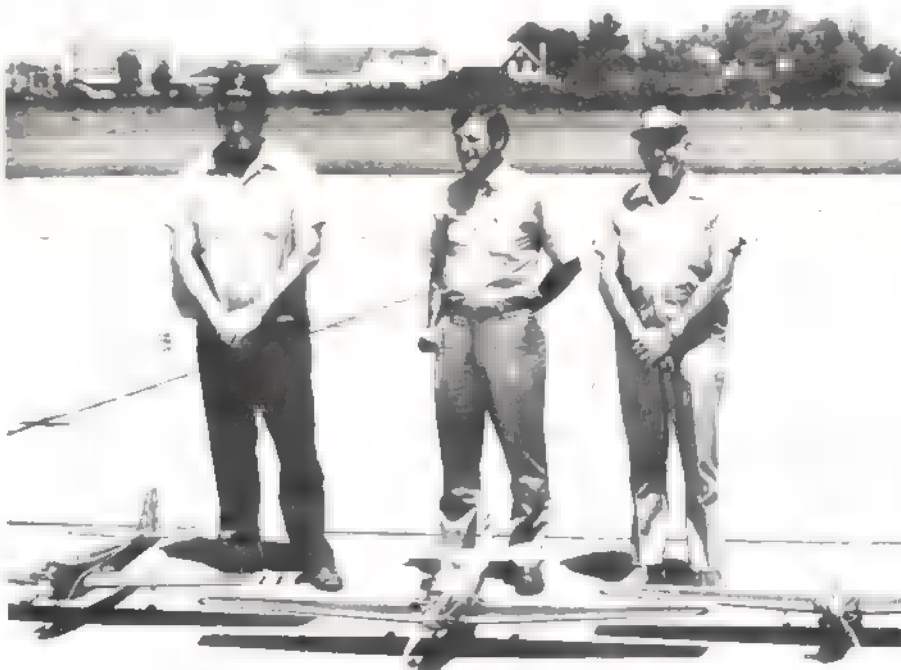
A very interesting flap/aileron arrangement was used by both **Bob Smith** and **Ed Hotelling** on their Pattern ships. Bob says the flaps cut landing speeds in half! Bob flew a beautiful T-2A which he plans to add to his kit line. Du-Bro showed a very interesting muffler which was used by several contestants. It is a compact device made of perforated flat plates stacked together with spacers; it will soon hit the market.

**Fred Hartshorn** flew a unique ship—very long fuselage, highly tapered wings and coupled flying stab and flaps! Now that was different! It was complete with retracts, 550 sq. in. and a Webra Blackhead—fast!

Pylon was dominated by the new K&B Schneurle engine. "Over the Hill" **Cliff Weirick** showed them in Formula I with all firsts. Many of the California troops dropped out in the finals for one reason or another—mostly equipment or damaged aircraft. A downwind takeoff was the nemesis of several. A near-disaster occurred when **Bob Reuther's** Minnow pranged into the crowd with equipment failure and New England's "Tiny" **Rich** escaped with a bad cut, bruises and shock. Tiny's buddy, **Jerry Wagner**, a potential winner due to a tremendous qualifying time, thereupon withdrew from the contest. **Bob Stockwell** did a great job calling the races. His expert patter added much to the activity.

Helicopters are here! Informal competition and demos in the evenings brought out many originals and kit designs. The most impressive (to me) was still the Schluter chopper flown by **Horace Hagen**. AAM's **Ed Sweeney** showed up with a very interesting variation on the Du-Bro Whirlybird soon to be an AAM feature. Windy conditions are still a strong deterrent to helicopter operation and proved to be the downfall of several, but progress has been remarkable!

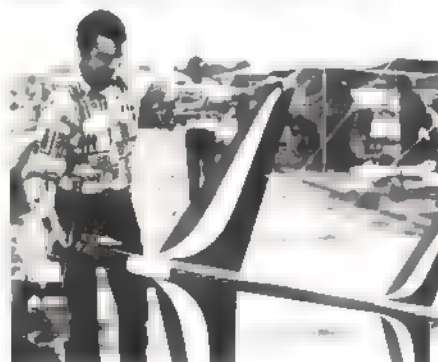
How does one sum up the '72 RC Nats? *Memorable*—the last (supposedly) Navy-sponsored Nats. *Frustrating*—same management errors here and there, I'm sure aided and abetted by lack of Navy help. *Scary*—the speeds of Formula I and FAI Pylon are almost out of hand. *Satisfying*—a demonstration of aircraft, design and performance, undreamed of when I first entered the hobby/sport. So into history we file the 1972 RC Nats.



The big winners in Class C: **Jim Whitley** (2nd), **Ron Chidgey** (1st for the second time) and **Don Coleman** (3rd). Note that Jim was flying **Ed Keck's** ship as a backup when his own ■ splattered due to radio interference.

**Leon Shulman** flew Top Flite kit P-51 Mustang in pattern until a glitch destroyed this fine ship, retracts and all.

The most unique pattern ship there—**Fred Hartshorn's Thunderball**. Coupled flying stab and flaps, 12 to 9% wing, wing taper 13 to ■ in. tip, 550 sq. in., 7½ lb., Rom-Air retracts. Really moved with a Webra Blackhead.



Scale winner in flight. **Bud Nosen's** highly detailed and colorful A-1 Skyraider which later crashed by control system failure.



**Mike Mueller** and his Mach 1 from Chicago. Also very close to qualifying for top 20 in Class C.





Beautifully finished in red and white trim is Lew McFarland's Akromaster. Lew finished fourth in the Open Stunt category with this fine scale-like plane.



Scale Racer by James Hojnaski has all the latest improvements used on many of this year's racers—foam wings, metal engine mounting plates, titanium gear, and Kosmic engine.



It's a Flap Jack; Navy's experimental Sea Skimmer was the basis for this novel Profile Carrier plane flown by Bob Hayward.

Small League of Nations is seen in this line-up of Class I and II Carrier planes. Planes are Mauler, Martin MO-1, Guardians, Fairey Spearfish (English) and The Latecoere (French). Also seen, but not pictured, were several Japanese planes.



Dick Sawicki's Fairey Spearfish is extremely stable as it is here in the low speed run. This fine flying plane earned Dick a fourth place in Open Navy Carrier.



This beautiful F4 Phantom by John Valasek was the only jet-powered entry in the CL Scale events. It weighed 6½ lbs. and was equipped with a Dyna-Jet. It is from AAM plans.

There's no doubt about this one, it's a clean cut—one of the many seen in the final round of the Open Combat matches.



The 41st Nationals Competition of the Academy of Model Aeronautics was hosted for the 25th time by the U.S. Navy at Glenview N.A.S., Illinois, during the week of July 24 to July 30, 1972. For those of you who could not attend we'll try and present the highlights of this year's competition.

Before getting into the competition highlights, I'd like to cover briefly what makes a Nationals competition. We might ask the question: Is the NATS a true Nationals competition? I think not. Our Nationals competition is more like an annual convention of model fliers. It is that once a year opportunity for the inexperienced to come in contact with the champs. It's a time when clubs or areas of the country come together to fight it out in friendly competitive rivalry, and of course it's a time when last year's champions try to retain their crowns for another year. It's also a time for talking about the good old days and renewing modeling acquaintances.

Modelers come from just about every state in the United States, Canada and Mexico—with cars, station wagons, campers and trailers all loaded with modeling equipment. Housing arrangements are somewhat unique; those with campers of course live in them, many stay in Navy barracks, while still others bring tents to form what the modelers refer to as "Tent City."

To put on this yearly extravaganza there are several hundred people working behind the scenes to make each meet a success. Many are members of the competitors' families and many are just modelers who gave up flying in the competition to work. That help was required more this year than in the past because of the Navy's reduced manpower roll.

Our many "thanks" to all who gave up some of their flying time to work.

Rat and Scale Racing participants saw two spectacular performances, one by the Boss Rat Team and the other by a club known as the Cow Town Circle Burners.

The Boss Rat Team has been trying for seven years to capture the Open Rat Race crown, and finally succeeded this year. Not only did they take the Open Class, but also succeeded in winning in the Senior category.

Bill Keller piloted his HP-powered ship to a 5:10.4 win in Open which was 14 sec. faster than last year's time, while Bernie Varnau captured the Senior Class for the Boss team. (With a name like that I couldn't help but root for them.) It should be noted that Bill Keller's win in Open was made under extremely bad weather conditions. Not only was it rather cold, but it rained heavily almost all day long. Perhaps this helped keep his engine cool for the great time turned in.

The Cow Town Circle Burners of the Irving-Dallas, Texas area put in a most impressive performance in Scale Racing by flying to victory in all three classes.

Mark McEndree, Junior Class; Dennis Williams, Senior Class; while Kerry Turner took the Open Class. The best time posted was 6:54.3 by Turner





## CONTROL LINE

### 1/4A SPEED

Junior	MPH
1. Jimmy Clem	89.25
2. Glen Van Sant	88.98
3. Patrick Hempel	84.71
4. Dennis McGraw	80.47
5. Bruce Pallet	78.98

Senior	MPH
1. Brian Pardue	102.00
2. Terry Herron	100.63
3. James Wade	91.43
4. Comerford/Langlois	90.96
5. Charles Schubert	89.34

Open	MPH
1. Mary Lou Brown	98.43
2. Jett/Upton	95.71
3. Baughman/Kantrow	94.80
4. M. Valerius	94.20
5. R. Bradshaw	91.52

### A SPEED

Junior	MPH
1. Jimmy Clem	124.78
2. Glen Van Sant	123.41
3. Patrick Hempel	117.52
4. Carl Parsons	92.41

Senior	MPH
1. Terry Herron	153.00
2. R. Wisniewski	151.33
3. Comerford/Langlois	149.07
4. Ray Alonzo	138.19
5. Brian Pardue	137.66

Open	MPH
1. Luther Roy	162.83
2. John Baltes	161.08
3. Richard Shannon	158.95
4. Bartley/Garner/Huff	157.55
5. Bernie Stadlem	157.14

### ■ SPEED

Junior	MPH
1. Dennis McGraw	156.05
2. Glen Van Sant	146.05
3. Patrick Hempel	136.93
4. Carl Parsons	130.67

Senior	MPH
1. Brian Webster	164.92
2. Comerford/Langlois	162.68
3. James Wade	159.23
4. Terry Herron	158.53
5. Ray Alonzo	156.87

Open	MPH
1. Shelton/Harris	181.20
2. Finn/Morton	178.50
3. John Deaton	174.52
4. Bernie Stadlem	168.16
5. R. Hemlinway	165.37

### C SPEED

Junior	MPH
1. Glen Van Sant	149.07
2. Dennis McGraw	148.33
3. Mark Coates	141.75
4. Allen Swanson	135.79
5. Patrick Hempel	122.99

Senior	MPH
1. C. Schubert	179.57
2. Terry Herron	178.50
3. Comerford/Langlois	177.09
4. Brian Webster	173.01
5. Brian Pardue	126.18

Open	MPH
1. Glenn Lee	186.84
2. Bartley/Garner/Huff	186.26

3. Garzon/Arpino	184.35
4. James Piliero	182.11
5. Donald Benesch	180.47

### JET SPEED

Jr.-Sr.-Op.	MPH
1. Myrle Hoyt	186.65
2. Bill Hoyt	181.20
3. Thomas/Wade	179.75
4. Seymour Olson	176.05
5. Yoho/Baughman	176.05

### FAI SPEED

Junior	MPH
1. George Husen	112.18
2. Mark Coates	101.26
3. Kenneth Bauer	88.91

Senior	MPH
1. Rick Wisniewski	128.49
2. Brian Webster	121.90
3. Brian Pardue	117.42
4. Jay Rosenberg	102.42

Open	MPH
1. C. Vassallo	137.91
2. Glenn Lee	128.93
3. Walter Mahnke	127.61
4. Clifton Norman	122.10
5. James Van Sant	97.34

### 1/4A PROTO SPEED

Junior-Profile	MPH
1. Jimmy Clem	82.23
2. Bruce Pallet	80.50
3. H. Dickinson	79.26
4. Matt Kelly	76.89
5. C. Westbrook	76.21

Junior	MPH
1. Dennis McGraw	78.30
2. Mark Bauer	65.43
3. Darrin Mathews	49.09

Senior	MPH
1. Terry Herron	90.51
2. Ross Legg	86.55
3. Comerford/Langlois	86.38
4. Ronald Ganser	76.60
5. Walter Gifford	66.89

Open	MPH
1. Warren Kurth	97.36
2. Jett/Upton	92.22
3. Bartley/Garner/Huff	91.71
4. Robert Bradshaw	86.92
5. Glenn Lee	82.23

### B PROTO SPEED

Junior	MPH
1. Glen Van Sant	117.29
2. H. Dickinson	117.18
3. Terry Fryer	101.51
4. Patrick Hempel	101.34

Senior	MPH
1. Terry Herron	139.86
2. Comerford/Langlois	139.53
3. Brian Webster	136.41
4. C. Schubert	132.49
5. Brian Pardue	129.63

Open	MPH
1. Bartley/Garner/Huff	156.59
2. Bussell/Anaston	153.67
3. Shelton/Harris	152.87
4. Finn/Morton	141.18
5. G. Brown III	137.56

### AEROBATICS

Junior	Points
1. Mark Bauer	324.00
2. R. Peterson	320.00
3. K. Stevens	276.25

4. Gerald Solomon	245.75
5. Daniel Osoba	232.00

Senior	MPH
1. Dennis Adamisin	489.25
2. M. Jackson	488.50
3. Mike Thompson	483.75
4. Alan Adamisin	438.25
5. John Hancock	381.00

Open	MPH
1. Al Rabe	627.75
2. Bob Gieseke	625.75
3. B. Rutherford	624.00
4. Lew McFarland	605.00
5. Gene Schaffer	601.75

### COMBAT

Junior	MPH
1. Jim Plake	
2. Douglas Harris	
3. Jon Norwood	
4. Richard Green	
5. William Vojislavac	

Senior	MPH
1. J. Russ Green	
2. Bernard Vernau	
3. Henry Graef	
4. Mike Schmieder	
5. Bill Miller	

Open	MPH
1. Michael Wheeler	
2. Jeffery Hollfelder	
3. Warren Sanders	
4. Ronald Esman	
4. Robert Baldus	

### FAI TEAM RACE

Jr.-Sr.-Op.	Min/Sec
1. Albritton/Joy	10:36.4
2. Van Sant/Van Sant	11:24.6
3. Osterle/Fischer	
4. Mearns/Nelson	
5. Phillips/Swindell	

### RAT RACE

Junior	Min/Sec
1. Rodney Lyons	6:57.4
2. Mark McEndree	7:06.0
3. Mike Mangan	10:02.0
4. David Danner	11:31.5

Senior	Min/Sec
1. Bernard Vernau	5:19.3
2. Dale Calvert	5:48.1
3. Stan Stoy	5:49.2
4. Mark Kinder	6:32.6
5. Edward Niemiec	7:11.0

Open	Min/Sec
1. William Keller	5:10.4
2. Ronald Esman	5:13.1
3. Geo. Cleveland	5:24.5
4. James Hojnacki	5:36.7
5. H. Williams	5:43.7

### SCALE RACING

Junior	Min/Sec
1. Mark McEndree	8:13.9
2. Douglas Harris	8:38.8
3. Steven Zick	8:47.4
4. Michael Baker	9:06.5
5. Wm. Connelly	11:22.8

Senior	Min/Sec
1. O. Williams	7:33.7
2. Phil Spies	7:45.0
3. Edward Niemiec	7:51.7
4. Dale Calvert	8:08.6
5. Mike Willmann	8:18.9

Open	Min/Sec
1. Kerry Turner	6:54.3
2. Norris Sparks	7:37.1
3. Glenn Lee	7:50.9
4. John Tulach	7:55.2
5. Frank McMillan	7:57.1

## NAVY CARRIER PROF.

Junior	Points
1. H. Dickinson	294.76
2. J. Potochnik	225.05
3. J. Tappiner	203.99
4. C. Servizzi	201.80
5. Chuck Tobin	200.51

Senior	Points
1. Robert Wright	349.49
2. Mike Willmann	346.54
3. Richard Doig	339.66
4. Dennis Williams	321.35
5. Phil Spies	293.99

Open	Points
1. Harry Higley	353.47
2. Harold Hackett	351.86
3. Denis Downs	336.04
4. Mike Starrett	333.65
5. David Engel	310.96

## NAVY CARRIER I

Junior	Points
1. Robert Sawicki	515.15
2. Dale Johnson	460.09
3. Terry Fryer	371.64

Senior	Points
1. Terry Herron	518.05
2. John Gerber	484.71

Open	Points
1. Ray Willmann	556.10
2. Richard Sawicki	553.95
3. Michael Bedard	550.14
4. Roland Baltes	545.79
5. Marlon Sawicki	518.27

## NAVY CARRIER II

Junior	Points
1. Robert Sawicki	507.78
2. Dale Johnson	407.44
3. Terry Fryer	286.71

Senior	Points
1. John Gerber	499.24
2. Joe Tracy	429.95
3. Chuck Thomas	403.17

Open	Points
1. James Finley	588.19
2. Harold Wallick	583.80
3. Ray Willmann	568.43
4. Richard Sawicki	568.28
5. Ed Sensenbaugh	554.38

## SCALE

### CONTROL LINE

Junior	Points
1. Darrin Mathews	223
2. Mark Bauer	193
3. Gary Cain	187
4. Paula Bauer	180
5. Andrew Arhelger	172

Senior	Points
1. John Glab	324
2. Rick Ouwelien	197
3. Patrick Lauer	
4. Piper J-3	

Open	Points
1. Ernie Violett	460
2. Robert Talchik	450
3. Lynn Sidabras	426
4. Michael Gertz	417
5. Raymond White	400



Contestants in the Goodyear Race event line up for technical examination before entering the competition.



Waiting in line seems to be part of the game. Navy Carrier ships are lined up for processing the night before flying the event.



The Dixie Whiz Kids, left to right, Dennis McGraw, Brian Webster, Mary Lou Brown, Charlie Schubert, and Brian Pardue, all champions in their own right, combined their talents again this year to walk off with the National Team Championship.



Tuning the engine of his carrier plane is Jim McEndree. The plane was piloted by his son, Mark.



This V-tailed French Fouga Magister sporting a Belgian paint scheme was another of the scale-like Stunters that brought Dennis Adamisin a first place win in the Senior Stunt category. Similar version of the model is in this issue of AAM.



Tanks away—Hawker Hurricane MK-2-G by Lynn Sidabras was the only CL Scale plane to demonstrate airborne operational features other than flaps and throttle control. His efforts garnered a third place win in the Open Class.



Gusty winds and rain couldn't dampen the spirits of 1/2A Proto racers (left to right) Peter Bauer (9) and Tommy Wozny (6). With temperatures dropping into the 60s and the onslaught of rain, the boys and their planes remained warm and dry under their home-made shelter.

in Open—some 25 sec. better than last year's mark. However, the best improvement in time was turned in by McEndree in his first Nat's entry, beating last year's time by posting an 8:13.9, 1:10.3 better than the 1971 winner. All Scale Racing winners used the Rossi 15 engine and the same basic plane.

In the hardware department many planes sported metal engine mounting plates, reported to reduce vibration and act as a heat sink for better engine cooling, thus better engine performance. Several inverted engine mountings were seen as well. Foam wings are also becoming popular in this fast growing event.

Dave Ankenman (Toronto, Canada) had the most novel engine-plane combination in Scale Racing. Dave had his Ole-Tiger Scale Racer outfitted with an ST 15 rear rotor engine and a tuned pipe. Dave had high hopes of turning some fabulous times but pit stop problems and weather prevented him from giving a winning performance.

Speed was plagued with weather problems—starting out on the first day of competition with rain, going to a cloudy and cool day on the second, and too hot and dry on the last two days. Just when most thought they had that magical needle valve setting, the conditions changed and so far fewer good times were posted than were expected.

No radical changes or improvements were noticed in the engines or equipment; the larger classes were again dominated by Rossi and Supertigre while the TDo49 was prevalent in the 1/2A events. It might be noted that the Juniors turnout in Proto Profile was the largest in many years, primarily due to Dale Kirn's "Torky," a well-constructed and good flying kit that can be mastered by the youngsters. The Jet event also had an exceptionally large turnout with considerable success attained by all in getting in full flights. Weather kept records from being established in many categories of Speed, however, several good performances were turned in.

The Bartley/Garner/Huff Team (High Point, N.C.) succeeded in establishing a record in the Open B Proto event with 156.59 mph.

Dennis McGraw, a Junior from Memphis, Tenn., put in a record performance in Jet Speed setting a 166.87 mph mark, and then backed it up with a 167.37 mph flight.

Glenn Lee (Batavia, Ill.) not only captured the Open C Speed Class with a 186.84 mph to beat out the Bartley/Garner/Huff Team by .58 mph in this event, but also captured the overall CL Championship award by accumulating 714.43 points. Glenn flew a finely made plane equipped with an OPS 60 and tuned pipe for his C Class win.

The Dixie Whiz Kids Do It Again—Dennis McGraw; Brian Webster, Manchester, Tenn.; Mary Lou Brown, Staten Island, N.Y.; Charlie Schubert, Greensboro, N.C.; and Brian Pardue, High Point, N.C. make up the Whiz Kids Team, and put in a spectacular performance by winning the National Team Championship for the second year in a

row. Flying in some 40 or more events the kids racked up an impressive 2919.98 points.

Over 200 contestants participated in this year's Combat Bash with 135 in Open, 65 in Senior and about 20 in the Junior class. When I say "Combat Bash" I mean just that, because there were more planes driven into the ground or involved in mid-air collisions than I have seen in the past three years. In two matches the Combat boys gave the Free Flyers competition—combat ships in each match broke loose and put in maxes. Both planes went up and out of sight. Howard Rush was one of those making a max; his plane was recovered from the N.A.S.'s golf course. I never did learn who flew the second Combat free fighter or whether it was found.

Combat flying this year was most spectacular. There seemed to be as much controversy on the ground as there was combat in the air. Contestants were at odds with the judges on many calls on how many cuts were made or who had the kill. One such protest ended in the awarding of duplicate trophies for fourth place in Open Combat to Bob Baldus (Dayton, Ohio) and Ron Esman (Houston, Texas).

There was also a display of sportsmanship between two buddies, J. Sima and W. Keidel in the semi-final fly-offs for fifth place in the Senior category. Sima and Keidel were matched against each other. This would have been alright except for the fact that they only had one plane between them. Sima forfeited the match to allow Keidel to fly in the next round. As it turned out Keidel lost to B. Miller (Des Moines, Iowa) for the fifth place honors.

**Texas Does It In Combat**—All three category winners in Combat hailed from Houston or Dallas. Mike Wheeler from Dallas took the Open event by posting ten sec. better air time than John Hollfelder (Castro Valley, Cal.). Mike flew a "Spoiler" equipped with ST 35BB engine, a pacifier, 9-6 Power prop and used 40% nitro fuel. Russ Green, from Dallas, Texas took the Senior category with his "Sneaker" equipped with an ST 35BB, pacifier and an 8-8 Tornado prop. Engines used by both these winners had been reworked by Phil Bascel. J. Plake of Houston was the winner in the Junior Class.

In the Navy Carrier event we were pleasantly surprised by the small League of Nations displayed in the various planes. The ever-dominant Guardian of the past few years seems to be giving way to a new variety of planes, all of which proved to be good flying ships. In addition to the ever-present Guardian the following planes were seen: Martin MO-1 by Don Gerber, Mauler by Robert Sawicki, N5B Kate (Japanese) by Tony Naccarato Jr., Naka Jima Myrt (Japanese) by Roland Baltes, Judy (Japanese) by Terry Herron, Latecoere (France) and Fairey Spearfish (England) both by Dick Sawicki. All these planes flew very well with several of them reaching the winners' circle. If you are looking for a Carrier ship that's a little

(Continued on page 82)



Glenn Lee, the tall quiet of the speed circles, made quite a roar this year capturing the Individual CL Championship. Glenn displays his 60 powered Speed ship which won him a first in C Speed with 186.84 mph



It's a family effort. Paula, Peter and Matthew Bauer all entered the Junior Scale category with their Volksplanes. Paula beat her brothers by placing fourth.



Cow Town Circle Burners from Ft. Worth, Texas, make a clean sweep of top honors in Scale Racing. Left to right are Kerry Turner, Open; Mark McEndres, Junior; and Dennis Williams, Senior.



Upside down or right side up, it's a good flyer. Pictured here is Al Rabe's scale-like Seafury Stunter during inverted portion of flight pattern. Al flew the Seafury to a first place win in the Open Stunt Class.



Retrieving a rat by Sherwood Buckstaff his pitman, Ron Esman (right), and Carl Layman.



Displaying one of his many planes, William Allen shows the finer points of combat to Miss Model Aviation, Linda Pilon.



Jim Finley shows off his Nats winning Guardian with Terry Herron (right), winner in the Senior Class I event, and Greg Missem.



Holding hands in victory, Mike Wheeler and girl friend show great pleasure over Mike's first place win in the Open Combat Class.

# PYLON



The FAI winners, Garry Korpi and partner Luke Roy (1st), Charley Smith (3rd), and Terry Prather (2nd) are all going to England for the Cranfield Internats—great U.S.A. representation. Telford/Violett, Larry Leonard, Doug Spreng, Whit Stockwell, F.N. Maire, and Jeff Bartken are also going.

Leader of the "coming up the other side of the hill gang," Cliff Weirick won in Formula I, firsts in all heats for this former AMA President.



Dan McCan puts the finishing touches on a propeller before qualification flights.

Who says all the chess action takes place in Iceland? Although an unlikely and sometimes nerve-racking location for a game of chess, old friends Douglas Spreng and Morris Atun found a place to relax during pylon racing.



Manuel Davilla of Mexico City replaces a propeller broken on take-off. He has been flying model airplanes for three years, and this is his first Nats and first Formula I competition.

Though Bob Smith had his troubles at the Nats this year, the end of September will see him married to this lovely gal holding his Miss DARA, Kathy McCan. He won't be fretting much then over all those cuts he took in FAI or the busted wing on take-off in his first Formula I heat—and he did establish a new world's record, 1:27.4 in qualifying!



D.C. May and Harold Coleson line ready to go. Came in 3rd and 4th and called for each other.

Really bad luck struck Bob Reuther when his radio failed, crashing model into ready area and injuring Tiny Rich, fortunately not seriously.



Three high points in Pylon Racing at the 1972 Nationals stand out: (1) Johnny Brodbeck and the K&B Schneurle were the fastest with the mostest; (2) Cliff Telford and Bob Violett dramatically improved the speed potential of FAI Pylon; (3) A serious accident, that could have been much worse, put a damper on the whole affair.

Consider the K&B story first. They posted the four top Formula I qualifying times: Bob Smith set a new record time of 1:27.5, followed by Larry Leonard with 1:30.1, Kent Nagy with 1:31.5, and Chuck Smith tied with Telford/Violett at 1:32.7. The slowest qualifying time was 1:40.0, a little slower than we had predicted (I didn't think anyone slower than 1:36 would make the finals). In the finals, eight out of the top ten finishers did it with the Schneurles, including the first four out of the top five: Terry Prather was fifth with a Tigre, and Telford/Violett were tenth.

There were no R.A.F. engines available for the Nats, and now it appears they will not be competing prior to next season. Jack Frye brought one of his test engines which Whit Stockwell flew for him after the Formula I finals were over; while the engine appears to have great promise, it is also clear that more refinement is needed. None of the H.P.s made the finals, and only four Super-tigres did.

On the other hand, there was ample evidence in FAI Pylon that the Tigre is equal or superior to the '71 K&Bs (almost no one tried to run a Schneurle in FAI, for good reason). The Korpi/Roy team, with a '71 K&B modified with Luke Roy's special head, took four firsts out of five heats, and were second to Whit Stockwell's Aldrich Supertigre in the only heat where he got off the ground all day. Since that 1:59.4 for second place was the best time Korpi posted in the finals, though he had a 1:51.8 in the qualifying runs, it would appear that the engines are competitive.

More striking evidence of the competitive status of the Tigre in FAI was the spectacular showing of the Telford/Violett team in the qualifying runs, where after failing to get off on their first attempt, they posted a 1:45 for eleven laps, and a 1:44.4 in the finals for ten laps. Some of their speed can certainly be attributed to their highly original design which places the two wheels side by side in the belly of the fuselage, leaving a completely clean wing and absolute minimum wheel drag, with anhedral in the stab to give ground-handling stability (about a half inch clearance on each tip). It was the ground-handling stability that cost them the contest, since they were faster than anyone else by a wide margin. All they really had to do was get in the air five times and cruise around the course. But, as in qualifying, they failed to get in the air once, and twice were beaten when their extremely sensitive needle valve setting was off the mark. In the end, K&B not only had the first four places in Formula I, but one, three and five in FAI.

The accident that marred the Formula I races happily turned out to be less serious than it at first appeared to be. The control tent and ready area were only 150 ft. from the No. 3 pylon—absolute minimal legal distance. Never again should it be less than 300 ft. Bob Reuther had completed the first heat of the day and was coming around No. 3 rather wide at the end of his precautionary eleventh lap when his radio went ape and he got two bumps and then full down elevator. The plane smashed directly into the ready area, hitting Tony Rich, who is Jerry Wagner's caller, on the left wrist and side. Tiny was in shock for a few minutes, an ambulance quickly got him over to X-ray, and within half an hour he was back watching the races, with a bone fracture in the wrist. But it was so close that we can only shudder at what might have happened. There is no point in saying that it could have been prevented by slowing them down: it was *not* pilot error, and a plane going 10 m.p.h. slower would have done exactly the same thing. I am reporting it in detail as I want the facts known without distortion or hand-wringing over the dangers of Pylon Racing.

Because of the accident, Jerry Wagner withdrew from the remainder of the competition. I was tremendously impressed with his airplane, his general competence, and his sportsmanship. His blue mid-wing Cosmic Wind was one of the very finest Formula I ships to qualify. All balsa, including the cheek cowl and a built-up stab and fin, it weighed 4 3/4 lb. all completed, and Jerry had to add some lead to make it legal. Jerry's 1:33.0 was sixth best qualifying time, and I think there's no doubt he would have placed high in the finals. I think he's about the best bet I've seen to win the Nats next year, given any decent breaks at all.

My own association with Pylon Racing only goes back to 1967, when I saw Joe Foster beat Cliff Weirick in a fly-off for first that ended with Cliff's dramatic dive from several hundred feet up (his victory roll) that splattered his Midget Mustang totally in an area that could be covered by a dinner napkin. But before that, he was the winner of the first Nats Pylon Races ever. And now, six or seven years later, after several near misses, this former AMA president, this leader of the Over-the-Hill-Gang, has done it again: and he earned it with five perfect races, in one race beating Terry Prather and Larry Leonard (who ended up fifth and second, respectively), beating Harold Coleson in another (he came out a sparkling third), and D.C. May and Danny McCan in still another (D.C. was fourth, in the end, and Danny had carburetor trouble that knocked him down to eleventh). Cliff's time was only the fourth best of the finals (1:34.9, with Leonard's 1:33.5, Prather's 1:34.0, and Nagy's 1:34.7 ahead of him), but he was as fast as he had to be whenever it was necessary: and just as he did at Las Vegas, he came through on the big ones. I have never seen a more exciting race

(Continued on page 94)



Carl Goldberg watches at starting line as they're about to be released. His new retracts very popular for in FAI birds.

Irwin Funderburk with Stengall Minnow.



Cliff Telford and Bob Violett's Tigre picked the day the Nats finals to over the hill. The prototype plane built amid mild protests about the landing gear system on the Bob Cat. However, it does meet the rules and will beat 1:30 with a bit more flying.

Morris Atun holds model aloft to confirm needle setting.



The Formula I winners with starter Jerry Christensen and race controller and tabulator Jean Christensen, the left and right hands of C.D. Glen Spickler. In front between Jean and Jerry are Cliff Weirick (1st) and Jerry Leonard (2nd). Cliff is holding his Stafford Minnow, Larry his P.B. Products' Miss DARA. Behind them are, left to right, Harold Coleson (3rd) and D.C. May (4th), both with their Stengall Minnows, and Terry Prather (5th) with Stafford Minnow. All except Terry had K&B '72 Torpedoes; Terry had his reliable Super-tigre.

Charley Smith, one of the leaders of the Southern California NMPRA District and 3rd in FAI, with C.D. Glen Spickler and former NMPRA President Pete Read who, like many other top fliers, couldn't put it all together for the '72 Nats.



You have to believe this is the man, Johnny Brodbeck, Jr., who really won the Nats 1972 Pylon event with K&B Schneurle engines. This picture shows Johnny with the two rubber ducks he awarded Cliff Weirick (Formula I 1st) and Garry Korpi (FAI 1st) along with unlimited beer.

Larry Leonard (2nd in Formula I) sets needle; caller Bob Bleaden holds.



## GRAND NATIONAL CHAMPION



**BRIAN WEBSTER**

If it wasn't for the friends he has made in modeling, Brian Webster wouldn't have been the 1972 Grand National Champion (as well as the Senior age class National Champion). In fact he likely wouldn't have entered the Nats at all or kept with model aircraft for all the period of time since his father, Lee Webster, introduced him to this hobby-sport at the age of three (!) had it not been for the most pleasant associations he has developed. In an interview with an AMA staffer Brian said, "You come to the Nats more to see your friends than you do to fly."

But fly Brian did, and very well indeed as attested by his champion-of-champions award. He not only bettered his own 15-18 age peers but the older and younger flyers as well. Brian is 18 years old.

Unlike the National Category Champions which require expertise in only one basic type of model (outdoor Free Flight, Indoor, Radio Control, Scale and Control Line), a successful aspirant for the Individual National Championships (Junior, Senior, Open and Grand) must bridge the categories. Of the nine events maximum to be considered for scoring, only two each are permitted in FF Gas power, FF non-Gas power (including Indoor) and Control Line. The remaining three can come from any of the categories.

Brian Webster chose his championship events very carefully. A prime consideration of course, was to fly the models he could expect to do well with based upon pre-Nats performance. But another factor, which he said is equally important, has to do with how points are computed according to official AMA rules.

Two years ago it was standard practice to lean heavily on outdoor FF events because everyone who "maxed out" would receive 100 points irrespective of how much flyoff time was added onto the score of the winner. Then came the new and current procedure which includes flyoffs and which awards 100 points only to the winner; and as Brian indicates, championship contenders stayed away in droves from such events as Unlimited Rub-

ber where the winner could be expected to be determined from the total of many flyoffs.

A look at Brian's events shows that he adhered fully to this concept: FF non-Gas power Indoor Scale and Nordic Glider; FF Gas power-B FF Gas and FAI Power; Control Line-A Speed, B Speed, C Speed, FAI Speed, and B Proto Speed. As the results indicate, he was the winner or a high placer in many of these events, and even where his name is not shown as being within the first five places, he still received a good number of points for having a high (though not winning) score relative to the winner's.

Brian has just graduated from high school where he was strong in math and the sciences, and he expects to enter college this fall. Primary interests beyond modeling are in full scale airplanes and car rework. Currently he prides himself with a custom VW which has fiberglass fenders and a Corvair engine.

Most of Brian's models are his own design but incorporate the best features of winning designs by others. He rates foremost the need for consistency among the airplanes he flies rather than ultimate performance.

Two times previously, in 1970 and 1971, Brian has been Senior National Champion. This year he put it all together for the third straight year for Senior plus the top prize, the Grand National Championships. He has twice been King Orange International Contest Champion, and he has held the national record for FF FAI Power.

## JUNIOR NATIONAL CHAMPION



**KENNETH BAUER**

Kenneth Bauer, the 1972 Junior National Champion, was influenced to begin modeling at age eight by his dad. He is now 13 and will

be in the eighth grade this fall. Optional school activities that suit his interests are science and the band; he plays trombone.

Ken's primary field is Free Flight modeling in which he has had expert tutorage and advice from not only his father but also such "name" modelers as Bob White, Jim Quinn, Bob Gibbs and Sal Taibi. That's good company to be in-which Ken recognizes and for which he is most appreciative. And during the Nats, Ken remarked that Rick Wisniewski had been very helpful at the Control Line circles.

Help is a two-way street as far as the Junior Champ is concerned. A prime example of this, brought out in our interview, occurred on the night before he left his California home for the Nats. There he was, at 8 pm,

helping a neighbor boy at his first try to learn how to fly Control Line!

Since young Bauer's experience is mostly with Free Flight models, it is not strange that his championship entries leaned heavily in that direction: Indoor HL Glider, Unlimited Rubber, Coupe d'Hiver Rubber, 1/2A FF Gas and A FF Gas. His Control Line entries, built especially for the Nats, were 1/2A Speed, 1/2A Profile Proto, FAI Speed, and Stunt. This was Ken's third National Contest.

Many original design models were among Ken's entries. A notable exception was the Starduster 350 which he flew in 1/2A and A FF Gas merely by swapping engines. He pulled another swap, using the same prop assembly for Unlimited Rubber and Coupe d'Hiver.

Why does Ken like modeling? "It's fun to do," he said, "and it also keeps you busy."

## OPEN NATIONAL CHAMPION



**BUCKY SERVAITES**

The three-year reign of Bucky Servaites as Grand National Champion was ended in 1972, but it is believed that he has set a new mark for the consecutive number of years being Open National Champion-four. Bucky has been Open Nats Champ continuously since 1969!

Bucky builds and flies models primarily for the relaxation it gives him, he says. Even

with his work as a bridge engineer for the State of Ohio Highway Department, he makes the opportunity for having this kind of relaxation take place. Come lunch time he closes his office door, takes the phone off the hook, gets out the sticks, glue, board, etc., and "has at it" for 45 minutes or so...to forget the trials and tribulations of the day.

One of Bucky's strategies in Nats flying is to make good use of his exuberant energy at the beginning of the contest by flying many events early and then tapering off as the week (and he) wears on. This works well for him since he especially likes and is proficient at all kinds of Indoor flying, scheduled at the beginning.

In using reasoning virtually identical with Brian Webster's in choosing his nine events-those with little flyoff potential-Bucky's selections were: FF non-Gas power-Indoor HL Glider, Indoor Scale, Indoor Cabin, Outdoor FF Scale and Coupe d'Hiver Rubber; FF Gas power-A FF Gas and B FF Gas; Control Line-1/2A Speed and 1/2A Proto Speed. A snag

which may well have played an important role in Bucky's not being Grand Champion this year was that his planning did not take into account the need to turn in his outdoor FF Scale model on time (for static judging); the deadline occurred while he was flying Indoor Rubber in downtown Chicago, and thus he received a zero.

About half the models Bucky flew were of his own design, the other half by others. The 1/2A Speed and Proto designs were his own, although he indicates they are modifications of Warren Kurth designs. For Indoor Stick and Cabin he goes for published Joe Bilgri designs except for his own props which incorporate current thinking regarding area distribution to induce "flare" (variable pitch).

Bucky was 31 years old at the time of the Nats but celebrated his 32nd birthday a few days later. He has been in modeling for about 23 years. Interest in model aircraft structures led to his majoring in structure design and analysis at the University of Dayton where he earned a degree in civil engineering.



# BEHIND THE SCENES



With this year's emphasis on AMA members doing the work, many of the competitors pitched in. Here we see them setting up the Navy Carrier decks.

Taking the contestants' and compiling them for future use was the job of Frank Nautais.



The lamp support cables collected indoor models like a flypaper strip collects flies. "Major" Brown lowered the lamps to the floor, and most were recovered.

Continued from page 22

in the neighborhood of \$15,000 more than previous years.

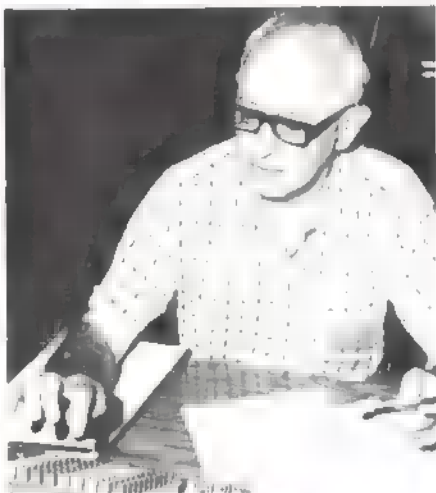
This was regarded by AMA officers as a tough cost situation but one that could be met by a combination of fee increases and service reductions. It was generally felt that a limited loss situation could be tolerated in order to prevent cancellation of the Nats program in 1972. So, with some gulps and finger-crossing, the Nats planning went ahead. It was already late in the year, but a special effort would be made to catch up.

Then came another crisis in May. A request for clarification of AMA's financial obligation indicated that the cost could go up another \$10,000 above the basic \$15,000 that planning was based on. The threat of Nats cancellation, this time by AMA, was again in the air.

But some quick AMA HQ action on the phone came up with the answer. Discussion with the Navy revealed the problem to be an apparent need to fly aircraft away from the station during the Nats, the cost of which would have to be borne by AMA. By brainstorming the problem the solution came to light: relocation of Control Line events and the Sunday air show so as to permit station aircraft to remain in their normal squadron locations.

Agreement by the commanding officer, followed by a meeting at the Pentagon, confirmed the solution. The crisis was averted; the Nats was back on. But valuable time had been lost. There was barely time to get word to all Nats officials concerning details of travel and lodging. There was some confusion and some juggling of Nats workers due to the late word, but these problems were largely solved by a week before Nats time when AMA

(Continued on page 102)



Wouldn't it be Nats without the hundreds of workbenches in the hangar, which assembled and put in place by AMA air-lift gang.

It took five hours to grade than 50 indoor rubber-powered flying scale models in three classes.



AMA officials snap color coded flags to signal model pilots that their planes have cleared the pylon during RC Formula 1 Pylon race.

Part of the frequency monitoring was handled by John Swanson.

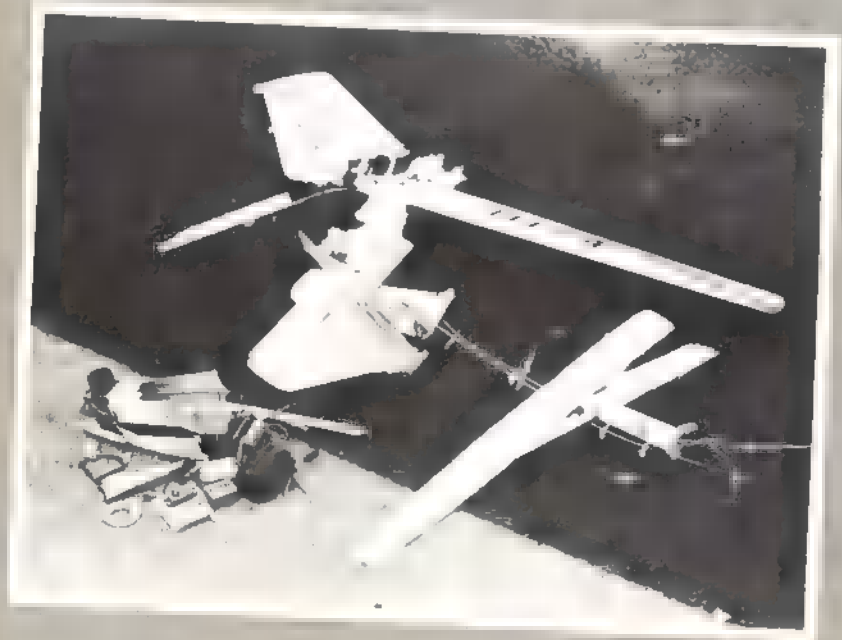
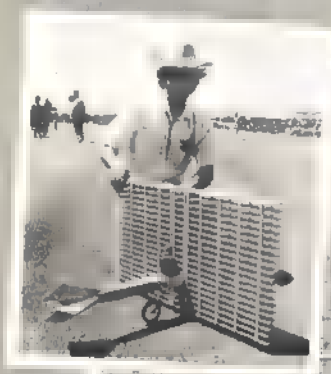
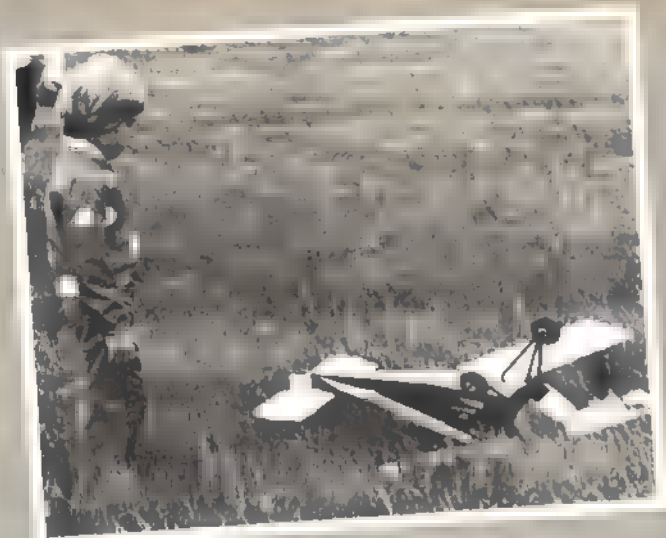


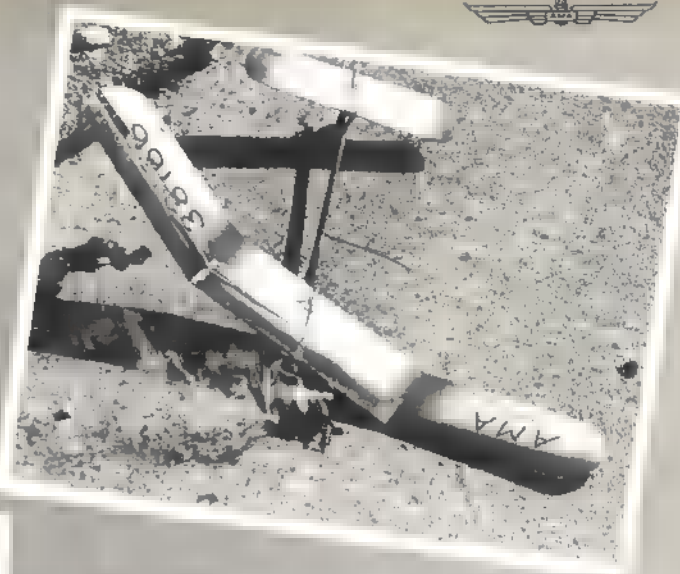
The official counters and starter were, from left to right, Howard Nupen, Jim Buckmann (Chicago area Vice President of NMPRA), Loretta and Ken Hall, Horace Cook and Jerry Christensen.

Jerry Davet's RC scale model was judged by Keith Ward, Bill Kneep and Johnnie Cashburn. They are just three of the several score of judges.



# ANONYMOUS





## JIM WILMOT

The Warlock was one of the classic mistakes of all time. The usual procedure of thought and design was somewhat reversed in the creation of this machine. Far more thought and theory was expended after the first version was flown to discover why this aircraft could perform so flawlessly.

In late fall 1970, I was out flying my past National's Pattern ship and was feeling rather unsatisfied with it. Something was lacking. After a relatively dismal flight, I was stricken to the core when Lloyd Nicholson (our local big-time contest flier) offered to let me try his latest design for the weekend. (Why, I'll never know!)

Sometime later, we descended into the murky depths of his basement, a light was flipped on, and there amidst the balsa shavings and dope fumes squatted the strangest, most bizarre creation I had ever seen. If you can mentally combine the outlines of a Bornark

missile, the character of a broomstick, and the grotesque charm of an Ugly Stick, I think you will get the idea.

Upon closer examination, even stranger particulars came to my attention: flying stab, delta-outline wing, formerless fuselage, and a "King" airfoil. From this angular airframe would evolve the precise machines of a new era!

The next weekend was exclusively spent in trimming, practice and evaluation, and I slowly came to the conclusion that somewhere deep inside the essence of this craft was the answer I had been seeking. Suggestions were then typed up, and a set of modified drawings plotted out, all of which were returned with the cybernetic bird in the hopes of improving the breed. However, Lloyd had already started work along a different line, so I took it upon myself to create and modify from memory, as I had given away the only copy of my drawings. Luckily, measurements were

still clinging to the deep recesses of my mind; work progressed swiftly. Within two days the final draft was ready.

As the din of frenzied creation subsided, I dumbly stared at the result resting on the tangerine felt surface of the pool table. Something which had bothered me fixed itself into words: "Egad! The resemblance has been lost!"

The essence of its predecessor had been warped by the addition of tandem gear, a swept wing, top decking, stall strips, canopy, altered movements, new airfoils, increased areas, redrawn contours and a swept fin. Through the process of imagination and a bad memory, a totally different aircraft had been arrived at.

At last the fateful day of its maiden flight arrived. The Enya 6011 was cranked to life, and this behemoth taxied out to the center of the runway. Power was brought back to full idle, and a control check was made. A powerful realization slammed through the barriers

JUST IN TIME FOR HALLOWEEN!

# Warlock

of my subconscious: This monstrosity can't possibly be capable of controlled flight. It's too radical. . . too many new ideas at once. . . maybe I should forget about it. Every eye on the field is on me, I can't chicken out now. Somehow the throttle was shoved to the extreme, the Warlock screamed down the runway. Instinctively I pulled back on the stick, and the red, white and blue blur started to rotate. . . that's enough, now ease up. . . it's still going up! Put it into a bank. . . it's still going up! Loosen up now, just horse it on around, I thought to myself as more trim was stuffed into the box. . . here she comes!

During that immediate low full-power fly-by I came to experience a feeling of total exhilaration, of freedom and absolute precise control. I also realized that this craft was slightly under-powered and I would have to come down soon. This was one decision I wished to delay until I discovered how

the flying stab worked (I kept remembering the sight of countless past wrecks caused by improperly balanced flying stabs), and what the stalling speed was.

At the moment, altitude was no problem. Power was reduced to full idle, and back stick was fed in slowly until it became apparent that stalls were nearly impossible. With this knowledge, a final approach was set up, and a truly fantastic landing was accomplished due to the unique outrigger arrangement.

Further flights were cancelled until one of the newly introduced Supertigre Bluehead G60s was purchased, installed, and broken in. I had decided to run the Tigre rich for the first flight and was aghast when it died on me at 200 ft. altitude. I had only one landing under my belt, and panic set in immediately. I was not used to the feel of my handiwork. Instinctively, I pulled the craft into a split-S to keep my speed up, and

set up an approach for a *hot* landing. At about ten ft. altitude, I realized the Warlock was traveling at about 105 mph, downwind, and with a dead engine. As it screamed past me at eye level, I was uneasy but reassured by the two miles of runway. Sometime later, it dawned on me that my pride and joy was disappearing into the sunset with the same altitude and speed it had when it had passed by me. I let go of the back stick, and saw the plane come in contact with the strip, go careening back into the air, back down again, up again, and then settle down out of sight below the horizon. After a dismal four-mile walk to and from the site—only one outrigger was seriously damaged—I was told never to run a G-Tigre rich after it is broken in.

With an application of five-minute epoxy, I was back in business. The engine was leaned out, and the rest is history.



THE WARLOCK PLANE

NOW THE HIGH DENVER IS A WINNER IN COMPETITION  
WITH SPECTATORS

Throughout the contest season, the Warlock never failed to place high in the standings. This can be attributed to three factors. First, the Warlock has the capability to awe the judges and intimidate competitors. Due to its unusual appearance and unique design aspects, an immense psychological advantage was created in my favor. In this day of immaculate maneuvers, something is needed to make a flier stand above the others. In some cases, just the name of the contestant alone is good for an extra one or two points for each maneuver. Another way to influence the judges is to literally astound them by hauling out a truly unique aircraft which flies with utter perfection.

Second, when these intangible aspects have been peeled away, the most vital factor remains: *consistency*. In this design, all the components melded together into a flawless, dependable piece of machinery. Fate guided my decision toward selecting the Supertigre Blue-head as my main contest engine. Throughout the '71 contest season, I never experienced an engine malfunction—no aborted flights, dead-sticks, overheatings, load-ups on taxi, or even a broken prop! Also, I was fortunate because I never had to quit in the middle of a contest due to radio failure (Royal Classic 70 system). And the Warlock has its own dependable features: it has the uncanny ability to maintain precise contest trim, access to most vital areas is direct and simple, every component is incorporated simply and logically.

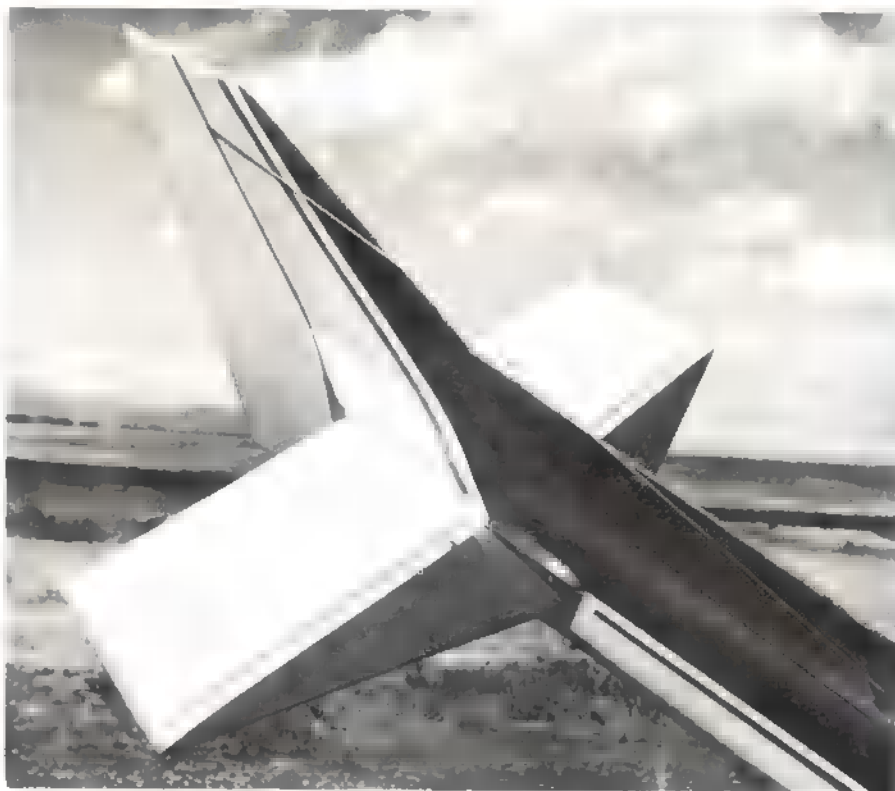
I was terribly perplexed about *why* the Warlock was so successful. After the fact, I did some research to find out where I went right! After some 83 pages of theory, I noted that through mistakes, curiosity, and pure luck, the Warlock design matches up almost item for item with the hypothetical aerobatic ideal. Through the conglomeration of rule-of-thumb and a fatalistic attitude, I've proven the age-old maxim of "what looks right flies right."

#### Construction

To all expert builders: If you expect to create a flyable, precise machine, you must carefully read these construction notes. Several unique practices are employed. The Warlock is not a Sport aircraft, nor even a C-Novice ship. It was designed to be exclusively built and flown by experts.

The wing should be built first. Notice that this particular wing cannot be built on an Adjusto-Jig due to its severe taper and sweep. Due to the need for precision, however, some jig has to be used. Notice that there are 1/4" holes in the rib templates through which 36" long 1/4" steel rods are inserted. One wing panel is completely assembled up to the stall strips on these rods at a time; later, both are joined together (with no dihedral) by inserting 1/4" hardwood dowels through the first three ribs on each side. Sheeting is applied around the center section and the optional stall strips, the formed leading edges are glued on, and the whole center section is then fiberglassed.

(Continued on page 69)



Top: All-flying stabs are becoming popular these days. Warlock was the first Pattern design to use it successfully. Smoother maneuvers and easy transport are its advantages.

Above: Guidance for Warlock is Royal Classic 70, retracts by Wing Mfg. Plane is relatively simple all-balsa design.

Right: There's plenty of room in the thin fuselage but servo locations may be a unique and widespread. Twelve-ounce tank carried in front with retract.

Below: How about Jim's flying site? It is just below Denver's recreation reservoir/lake. Model-size runways here, too.





# SWEET PEA



## DENNIS ADAMISIN

The Sweet Pea is my newest hat in the stunt design ring. It is a notch different than most stunt ships. The V-tail not only opens a whole new series of designs but seems to improve the plane's flying ability. This airplane is the first "full stunter" I have built with a V-tail, though it is actually the third development model in my V-tail series. Number four is on the board right now, and by the time you read this it will probably have been flown and evaluated. I do not believe in building the same airplane every year.

In 1965 my brother flew his first original design at the Nationals. That year marked the last time anyone in our family flew a kit design. Since then we have designed our own airplanes.

The Sweet Pea represents the present cog in our design machine. Since 1965, an impressive array of shapes has come off our drawing board with approximately half the designs actually built. The shapes have included jets, pure original, semi-scale and novelties. Variation in the design has been more than superficial; we have experimented with wing configurations, airfoils, stab and flap configurations, moment arms, wing and stab positions in relationship to the thrustline, size of the overall airplane, wing loadings, power loadings, tail-draggers, trike gears, tandem gears with

*(Text continued on page 86)  
(Plans on page 48)*



Dennis Adamisin with his V-tailed stunter Sweet Pea. An original design fashioned after the Sky Baby series, it has built-up wing with sheeting, OS-35 engine and 10-6 rev-up prop.







# MODEL AIRCRAFT OPERATING STANDARDS

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION



## 1. PURPOSE

This advisory circular outlines safety standards for operators of model aircraft, and encourages voluntary compliance with these standards.

## 2. BACKGROUND

Attention has been drawn to the increase in model aircraft operations, and the need for added caution in the case of free-flight and radio-controlled types to avoid creating a noise nuisance or a potential hazard to full-scale aircraft and persons and property on the surface.

## 3. OPERATING STANDARDS

Modelers, generally, are concerned about safety and do exercise good judgment when flying model aircraft. However, in the interest of avoiding undue criticism from affected communities and airspace users, compliance with the following standards is encouraged by operators of radio-controlled and free-flight models.

- a. Exercise vigilance for full-scale aircraft (get other people to help if possible) so as not to create a collision hazard.
- b. Select an operating site at a sufficient distance from populated areas to avoid creating a noise problem or a potential hazard.
- c. Do not fly higher than 400 feet above the surface.
- d. Do not operate closer than three miles from the boundary of an airport unless permitted to do so by the appropriate air traffic control facility in the case of an airport for which a control zone has been designated, or by the airport manager in the case of other airports.
- e. Do not hesitate to ask for assistance in complying with these guidelines at the airport traffic control tower, or air route traffic control center nearest the site of the proposed operations.

*William M. Flener*

William M. Flener  
Director, Air Traffic Service

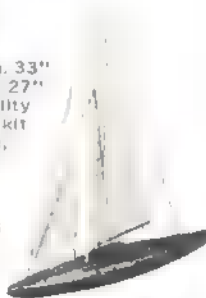


# Planked Hulls Make The Big Difference

## "Pirate" Racing Yacht

Approx. 24 1/2" long, 33" overall height. Mast 27" high. Excellent quality wood construction kit including keel plate, ribs, and planking. Detailed instructions and plans.

Complete with sails, metal keel, and fittings. \$13.00



LILLA DAN. 26 1/2" long, 4 1/4" wide, 19 1/4" high. Complete with fittings. \$42.00



DRAGON International Racing Class. 31" long. Complete with fittings. \$31.00



DANMARK ..... \$77.00  
complete with fittings

This training ship of the Danish Merchant Navy is a real beauty. Kit has wooden planked construction, and is complete with turned brass fittings. Scale 1:75 Length 35 1/2", 23 1/2" high, beam 5 1/2".



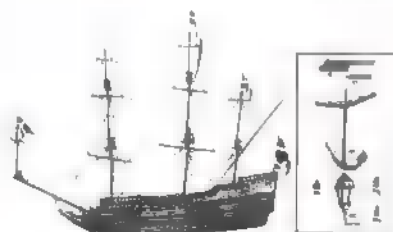
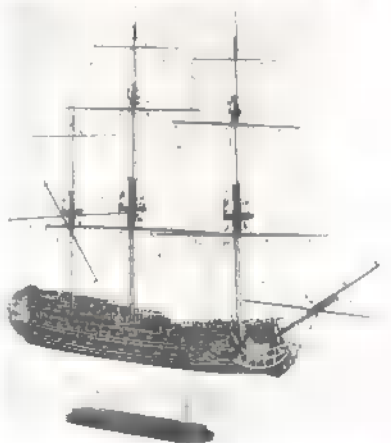
JYLLAND Frigate. 39 1/4" long, 24 1/4" high. Complete with fittings. \$67.00



BLUENOSE. 35" long, 27" high. Beam 5 1/2" with all fittings — \$52.00 \$49.00



ZWARTE ZEE tugboat. 30 1/4" long, 11 1/2" high, 5" beam. With fittings. \$55.00



WARSHIP WASA, original built in 1628. Sunk on maiden voyage. Located and lifted in 1960, now a museum piece. Beautiful model—23" long, 23" high. All wood kit with fine, precision brass fittings. Complete kit. \$44.00



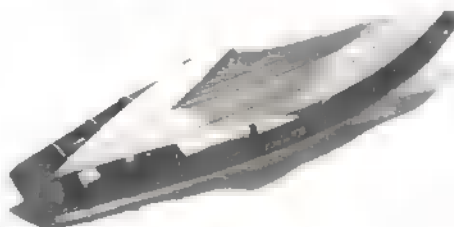
VIKING SHIP Exciting, authentic reproduction, scaled down to 26" by 6 1/2" Complete Kit. .... \$17.00



NORWEGIAN LION, a warship of 1765 — complete set of fittings includes 70 turned brass cannon. Challenging, rewarding kit to build. \$101.00



**STEP 1.** The ribbed hull of a typical Billing Boat® kit. No short cuts; you become the skilled modeler!

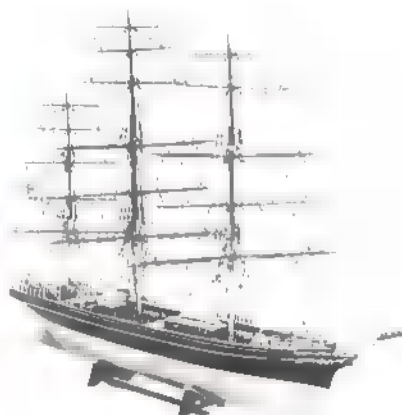


**STEP 2.** Planking is being laid in place. A simple challenge for any careful model builder.

**NEXT STEP:  
Pick Your Kit  
& Get Started**

# and Billing Boats® Has Them!

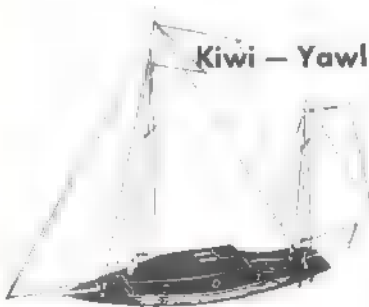
( DENMARK'S FINEST MODELS )



**CUTTY SARK** is scaled 1:75. Builds to a 44" show piece. Planked hull construction. A real modelers' challenge. Turned Brass Fittings. Complete kit. **\$96.00**



**"Samson" Sea-going Tug.** Unusually fine quality wood kit, with keel plate, ribs and planking. Excellent detailing includes rubber bumper on bow. Approximately 23 1/2" long. Complete with metal fittings. **\$22.00**



Excellent quality construction kit. 22 1/2" long by 19 1/2" high. Includes ribs, planking, Brass fittings, cloth for sails. Complete kit.—**\$14.00**



**"SCHOUW"** or Scow, Netherlands Canal freight barge. Easy to build this satisfying kit. Makes a 26" model with planked hull const., cloth sails, all fittings. Complete kit. **\$16.00**



**"STATENJACHT"** was what the Dutch called original Royal Yacht. Planked hull const. with hardwoods. Builds to 36" long by 8 1/2" wide and 33" high. Complete with fittings. **\$61.00**



**SANTA MARIA.** 21 1/2" long, 17 1/2" high, 5" beam. With fittings. **\$26.00**



**North Cutter** 21" long, 16" high. Complete with fittings. **\$33.00**



**SPERWER** — Model of Dutch Canal Boat, in scale of 1:15. Length 23 1/2", Width 9", height 32". Kit comes complete with sails and decorative side paddle. Complete with fittings of brass — **\$34.00.**

All Billing Boats scaled from originals. Planked hull construction with hardwoods. Turned Brass Fittings. Authentic Replicas.

Billing Boats® Reg. U.S. Patent Office

**KAYEFF, INC.**  
511 Campesina  
Arcadia, CA 91709

See Your Hobby Dealer...  
Dozens of beautiful models; some advertised in recent issues of this magazine. If dealer does not stock, send check or money order for direct, prompt shipment. California orders must add 5% sales tax. Satisfaction guaranteed.

FRANK SCOTT

The night is All Hallows' Eve, and ghostly figures scamper through the darkness to the lighted doorways where they demand their yearly tribute of sweets. There are, however, others who may call this night Lammas, and from overhead we hear the rustling of wind-blown garments as we glimpse a witch in flight on her way to the Witches' Sabbath.

Spooky indeed, but alas impossible. Magic is a flimsy substitute for aerodynamics, and so we have had to overcome the ancient broom's shortcomings with more modern power and balsa.

If you would like to duplicate our enchanting miss, pull yourself up to your workbench for a spell and clear off a spot big enough to glue together the soft 1/8" sheet balsa cape. Better first place a piece of plastic wrapping on the workbench unless you intend to fly the whole table.

Any wood model cement or white glue will suffice for the cape. Due to the unusual nature of this model, however, we strongly recommend using an epoxy-type glue for all other gluing to insure adequate strength.

The nose block can be either a solid block or laminated from any sheet wood to make a block 1 1/4" thick. When the glue has dried on the block, carefully square the front end with saw or sandpaper and drill lengthwise for the 3/8" dia. tail boom. Epoxy the 1/8" plywood firewall in place; when cured finish shaping the nose block and sand smooth.

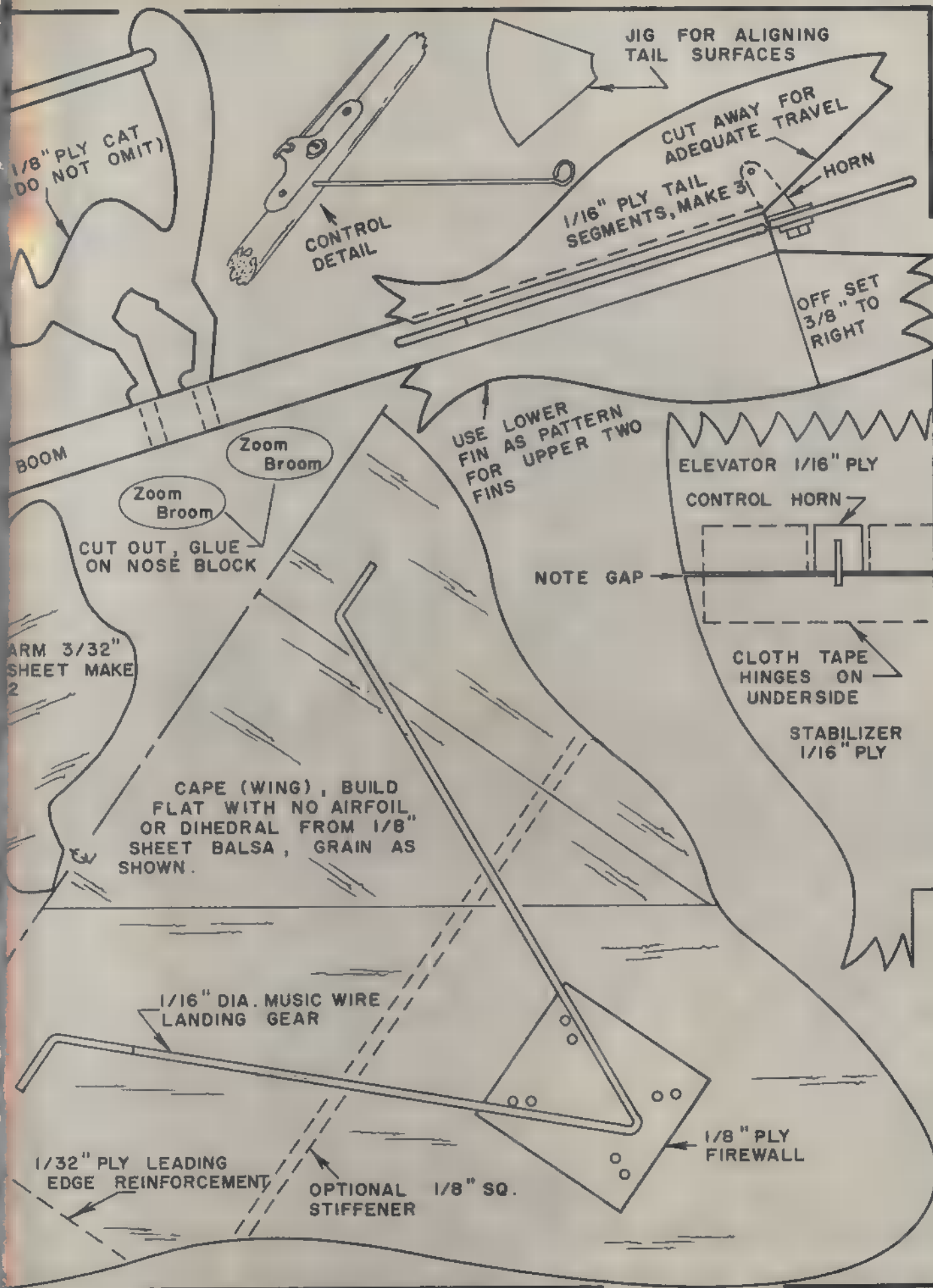
The broom handle is a 14" length of 3/8" dia. dowel slotted to receive the horizontal stabilizer and drilled to accept (in order, nose to tail) the line guide, bellcrank screw, and both the

*(Continued on page 57)*



GOO  
FOR THE  
TENDERFOOT

# Witch craft





# SIG PRODUCTS CREATE TOP QUALITY SC



Musey Hester's Ryan STA is one of the best known models in the world, having placed 2nd in England at the 1970 World meet, won 1st at the 1971 Nationals and recently captured 3rd in Toulouse at the 1972

World Championships, leading the U.S. RC Scale team to victory. It was the prototype for the popular Sig Ryan kit and is an outstanding performer in the air. A Logictrol Pro-Series radio is used for control.

The demanding aesthetic appearance of full scale aircraft requires the best. All models were built from Sig silk, surfaces prepared with Sig Super Duplication of Sig Lite competition with Sig these standards of the



The Shrike 2350 built by Claude Mc picked as the best scale model of the 1972 the judges at Glenview NAS in Chicago. Sterling award. It is completely riveted than 5,000 1/32" head aluminum rivets.



## MEYERS 145 CONTROL LINE SCALE

Mike Stott designed his Meyers 145 from measurements and photos taken of the big ship on display at the Antique Airplane Association Fly-In. It is complete in every detail, down to the ignition key in the instrument panel and packages of gum and cigarettes on the cabin rear deck. Ross Twin powered, Ron-Air units retract the gear and the flaps also operate. Mike placed 4th at the World Championships in France during August, highest placing member of the U. S. CL Scale team.

# SCALE MODELS

Assignment of reproducing the authentic full-size aircraft in miniature re-All three of these realistic beauties g balsa and glues, covered with Sig ared with Sig Sanding Sealer, fin-ercoat Dope topped off with an ap-te-Coat Clear Dope and flown in Sig Fuel. See your Sig dealer for the modeling world.



McCallough was 197. Nationals by go and given the etec with more ivets (available from Sig) and has a vacuum-formed ABS plastic covering on the tail to simulate the crumpled aluminum used on the full scale airplane. The model is stable and easy to handle in the air with Logictrol equipment.



  
KIT FF-21

## The '29er

*Rubber-Powered Scale-Like Flying Model*



### KIT FEATURES:

- Complete Building and Flying Instructions
- Detailed Plans with Isometric Construction Views
- Formed Plastic Propeller
- SIG Contest Rubber Strip for Maximum Turns
- High Flight Performance
- Die Cut SIG Balsa Parts

## SIG CLASSIC SERIES

DESIGNED BY PAUL McILRATH

Sig's Classic Series kits give you three important features that assure you of successful flights:

- (1) ■ proven flyable design
- (2) A reliable way to make flight adjustments
- (3) Complete flying instructions

Second in the Sig Classic Series, the '29er captures the familiar parasol look of several famous aircraft in an attractive blend of lines and function. A particularly stable model because of the high wing position, the difficulties usually found in this type of mounting have been eliminated by a simple, effective construction procedure. Designer Paul McIlrath has written a comprehensive 8 page booklet covering all phases of assembly. The trimming and testing sections are an education in the basis of model flying. The '29er takes its place beside the Cabin-air as a top notch sport rubber-powered kit.

SPAN: 20 1/2"  
LENGTH: 16"  
WEIGHT: Approx. 1 Oz.

**Realistic Appearance  
Combined With Fine  
Flying Performance**

Send \$1.00 Today for  
**SIG'S BIG NEW CATALOG!**  
**The Modeler's Wishbook"**

NO POSTAGE REQUIRED WHEN ORDERING CATALOG ALONE

THE 1972 SIG CATALOG is the greatest Model Airplane Catalog yet! Over 224 pages devoted exclusively to merchandise used in the building or flying of model airplanes. Features the complete Sig Line, plus practically all other lines available. Hundreds of models are illustrated including gliders, sailplanes, rubber-powered flying scale, control line stunt and scale, and every type of R.C. model. Send \$1.00 today for your copy or buy it from your local hobby dealer. You will agree it is the best bargain in the model airplane industry.



**ORDERING  
INSTRUCTIONS**

**SEE YOUR DEALER FIRST!** If he will not supply you, then order directly from our plant. We will ship promptly. To Order, please add \$1.00 for postage and handling in the U. S. Canadian orders please add \$1.50. Minimum order is \$1.00. Please remit by bank draft, check or money order. Print your name and address plainly. Sorry, No C.O.D. shipments. All prices subject to change without notice.

**SIG MANUFACTURING CO., INC**  
401 S. FRONT STREET MONTEZUMA, IOWA 50171

.045 MUSIC WIRE LINE GUIDE  
USE .045 WIRE FOR PUSH ROD

HAT BRIM  
ADD WART  
TO SUIT

CAPE

1/8" PLY WING BRACE

WING BRACE

BALANCE  
HERE

SUGGEST COX  
020 ENGINE

1/8" DIA. ALUMINUM TUBE  
HANDLE BARS

1/2" A BELL CRANK

3/8" DIA. DOWEL BROOM

HOLE FOR LINE GUIDE

USE VERY HARD 1/4"  
BALSA FOR WITCHES  
BODY

BALSA  
BLOCK

USE JIG TO  
OBTAIN ANGLE

END VIEW OF TAIL  
ASSEMBLY (NO SCALE)

HAT BRIM  
3/32" BALSA

1" DIA.  
WHEELS

witch craft

CONJURED BY  
FRANK SCOTT



Above left: The tail straws. With a bit of up-broom it will fly like magic. Dowel broom handle was carefully notched for the stabilizer and rudders.

Above right: Note the use of wire leadout guide. Don't guide the flying wires by the wing, you'll bank the model inward too much and not have enough line tension.

Left: Cape is lots of wing area. Model flies fairly slowly so choose calm weather for safety of the Witch.

#### Materials

1 - 1/8 x 3 x 36 balsa  
1 - 1/4 x 3 x 18 hard balsa  
1 - 3/32 balsa scrap sheet  
1 - 3/8 dia. birch dowel  
1 - 1/8 plywood  
1 - 1/16 plywood  
1 - 1/32 plywood  
.045, 1/16" dia. music wire  
Pair 1" dia. wheels  
1/2 A bellcrank and horn  
1/8" dia. aluminum tube  
No. 2 sheet metal screws  
Glue  
Fuelproof dope: clear, red and black

## WITCH CRAFT

(Continued from page 52)

cat's feet. With the stabilizer slot cut and holes drilled, this boom may be glued into the nose block.

Our bewitching aviatrix is cut from the hardest piece of 1/4" balsa available. After she has been shaped and sanded, saw her in two to allow for the broomstick. Wrap rough sandpaper around the broomstick, rough side out, and slide the witch halves back and forth in order to relieve them for a good fit with the boom. When you're satisfied with this fit, the witch may be epoxied to the broom handle.

The cape, which sustains our craft as a wing, needs only to be cut to shape and the edges sanded round. The wing is attached to the body with the 1/8" plywood "T" which passes through the witch's body, and reinforced by the 1/32" plywood plate at the under side of the leading edge. At the trailing edge, the wing is secured in place with the 1/8" plywood "Familiar" cat. The attachment of the cat is facilitated by the pegs left on the bottom of his feet which are glued into holes in the broomstick.

The 1/16" plywood fins are a bit

stiff for broom bristles, but being plywood, they are strong and help balance the machine. Of course balsa may be substituted, but then ballast may be required. Note that the horizontal stabilizer is made in one piece, is substantially larger than the other fins, and passes through the fuselage slot. The other fins are simply glued onto the broomstick. The lower vertical fin also serves as a rudder with its trailing edge bent 3/8" to the outside of the circle.

Incidentally, the rudder offset is the only line-tensioning device needed. The position of the line guide makes any wing tip weight ■ engine offset unnecessary.

In keeping with our modernization of the ancient vehicle, handlebars are provided for improved rider comfort. These are bent from 1/8" aluminum tube, and the witch's 3/32" sheet balsa arms ■ epoxied in place.

So much for the airframe. To give this project real color, it's time to decorate. A felt tip pen can be used to handily sketch in broom bristles and bindings and, after achieving some confidence with the broom, the witch's face. Give the entire model two coats of clear fuelproof dope, lightly sanding be-

tween coats. No fashion discerning witch would be caught in a drab cape, so a bright red lining is appropriate. The top of her cape, dress, hat and shoes are black. Stockings are the traditional red and white stripe. The engine pod can be any color that turns you on. The remainder—face, hands and broom—are clear finished.

Bend landing gear wire to shape and attach wheels. The landing gear is sandwiched between the firewall and engine when the engine is mounted with No. 2 sheet metal screws.

Mount the bellcrank and hook up pushrod. Finish the control system with the line guide, bent from .045 wire, epoxied in place.

Now for the final inspection. Check the model's balance and add ballast as necessary. If built according to plans, balance ought to be right with a Cox Pee Wee .020. Check for control freedom, warps, and anything which may put a hex on your witch.

At the flying field, try your flying sorceress on short lines (15 ft., for example). Fill the tank with the appropriate elixir, mutter the usual incantations, and with a bit of up broom it should fly like magic!

# Where the Action is

## Free Flight

### BOB MEUSER SPORT

Boeing Scholarship Contest: Marty Thompson of the Oakland Cloud Dusters did it again. He won the Boeing Bash, and a \$1500 check that goes with it. He took six first places (Half-A Gas, A/2 Towline Glider, Unlimited Rubber, Cargo, Outdoor Handlaunch Glider, and Easy-Bee) plus two second places (Control-Line Speed, and Helicopter). Quite a cross-section. We presented a three-view of his winning Forty-Plus Cargo model (December 1971 AAM, p. 35). It carried 20 oz. of three flights.

Meanwhile Back at Charlie: Last month we started on a complete uncut, unexpurgated expose of Charlie Sotich's Draw-Dip Nordic. Now comes the good part: the wing construction.

*Airfoil Data*  
Dimensions are in inches

X	0	.1	.25	.5	.75	1	1.25	1.5	2
Y <sub>u</sub>	.025	.105	.200	.315	.510	.590	.650	.695	.760
Y <sub>l</sub>	.390					.220			.100
X	.25	.3	.35	.4	.45	.5	.6	.7	.8
Y <sub>u</sub>	.790	.800	.785	.755	.705	.640	.570	.555	.0
Y <sub>l</sub>		.015	0		.025	.100	.220	.390	



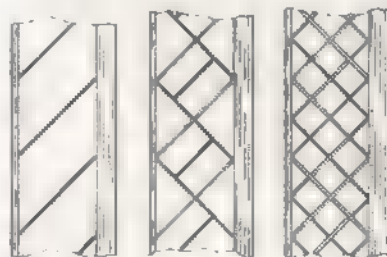
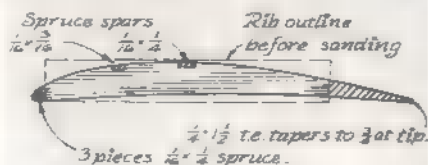
*Karbo-grit sanding sheet, top and bottom*



First of all, you will have to make a special sanding block, shaped to give a 10% thick logarithmic spiral on the convex side, and a circular arc on the concave side. (The coordinates are shown in the table.) The surfaces are covered with sandpaper or, better still, with "lifetime sandpaper," consisting of grits of tungsten carbide bonded to a thin sheet of steel called Craftsman Karbo-Grit Sanding Sheet which is sold at Sears Roebuck stores.

Charlie's method of constructing the wing appears to be similar to the one presented by Italy's Paolo Soave in Frank Zalc's 1969-1971 *Model Aeronautic Yearbook*. But it is different in important ways. You had best follow the recipe by the numbers, or you will void your guarantee.

- 1) Laminate the leading edge by forming and gluing the strips directly over the plans. Taper the trailing edge stock from 1/4 x 1 1/2 to a width of 3/4 at the tip.
- 2) Pin the LE and TE in place on the plans, and prop up the front edge of the TE to the proper angle.
- 3) Cut strips of sheet balsa to a width of 13/32 in. This is the rib stock.
- 4) Cut the full-ribs to length, and glue in place.



*First, the full ribs,  
then the half ribs,  
and finally the quarter ribs.  
(Parts being added are shown bold.)*

5) Cut the half-ribs to length, and glue in place. Then the quarter-ribs. Add the straight-across ribs to the wing roots. (When all the ribs are in place, the tops form a flat surface.)

6) (Here comes the sneaky part.) Remove the wing from the plan and set it on a flat surface top side down. Sand in the undercamber using the convex surface of the sanding block.

7) Turn the wing top side up, and align the trailing edge with the edge of the flat working surface. Sand in the upper surface camber using the concave side of the sanding block. Keep the leading edge guide on the sanding block in contact with the leading edge. Continue sanding until the sanding block bottoms out at the LE, and until the ribs are flush with the TE stock.

8) Sand the leading edge to shape.

9) Plane the top surface spars to a taper. Pin the spars to the rib joints, and mark the ribs for notching. Remove the spars, notch the ribs and glue the spars in place.

10) Brush water-thinned white glue over all the joints.

Charlie Sotich gives his Draw-Dip Nordic those masterful touches that make winners.



11) Coat the entire framework with clear Hobbykote.

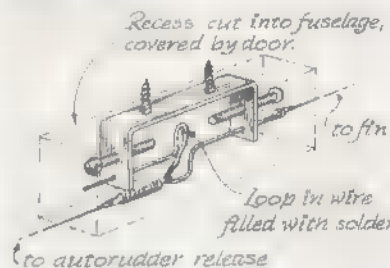
12) Mount the aluminum tubes which receive the wing-joiner wire with Sig Epoxy.

13) Cover the wings with MonoKote.

Stabilizer and rudder construction is similar, but since they are so small they can be sanded freehand. Stab section is flat-bottomed, 7% thick.



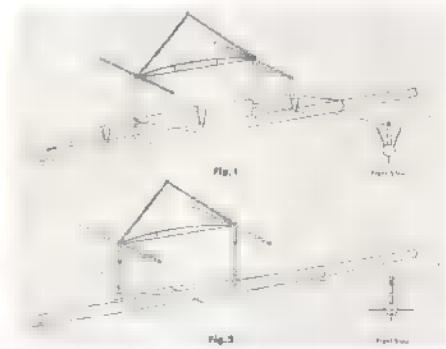
*Thoughtfully designed pay load model by Marty Thompson has one-bladed prop, four-point gear, and dropped wing tips.*

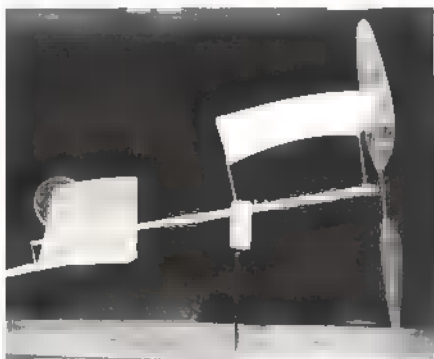


Indoor Plumbing Is In: There are two kinds of people in the world: those who prefer screw adjustments, and those who prefer glued-in-place shims. Charlie Sotich is one who prefers screw adjustments for Nordic rudder. The usual arrangement is a U-shaped bracket with a pair of tapped holes epoxied to the top of the tailboom. The rudder flops between the ends of a pair of screws inserted in the tapped holes. Charlie gets the whole thing inside the fuselage pod rather neatly, as the sketch shows. While the model is being towed, the formed wire is held against the front screw, and the rudder is approximately straight-ahead. When the towline is released, the formed wire is pulled to the rear against the other screw, permitting the rudder to flip to the glide position.

### BUO TENNY INDOOR

More Fuselage Bracing: The October 1972 issue explained the advantages of bracing motor sticks, and showed the two most popular bracing methods currently in use. This month, Fig. 1 shows another method of stick bracing, which has been used by experienced fliers for years. Because it is somewhat more demanding in craftsmanship and precise wire tension and alignment, it is not recommended for beginners.





An unusual Pennypine model by Dick Hardcastle is patterned after ideas from John Kukon and Doug McLean. Funny looking circle rudder sits atop fuselage while large stabilizer is pyloned below fuselage.

The posts are installed in pairs, with the posts passing through the motor stick and ending flush with the bottom of the stick in the center next to the motor. It is necessary to install the wires under tension, with the same tension in each wire. Field adjustment of the wires is not recommended unless building jigs are available to assure that the motor stick is straight and the wire tension correct.

One-gram FAI models need a fairly large piece of rubber and an extra-long fuselage must be used to permit enough turns for long flights. As a result, the motor sticks get extra stress from both torsional forces and rubber tension. The slightest mishandling of a tightly wound motor can deflect the stick to the side and cause it to collapse. For that reason, this correspondent designed the bracing shown in Fig. 2. The basic stick bending loads are taken by the removable top wire which derives extra leverage by being hooked on the wing posts. Side loads are taken by a tightly-strung wire which is permanently installed between the thrust bearing and rear hook. The wire passes over each end of a post which goes through the middle of the motor stick. For those who sometimes find their motor stick bowed to one side after being glued, this wire can be installed to hold the motor stick straight. As with the similar one-wire bracing explained in last month's issue, this system allows separate adjustment of left and downthrust, plus adjustment of the wire tension to permit the motor stick to bend slightly during the power burst. This combination of thrust adjustments and bending motor stick gives unusual latitude in adjusting the power pattern—quite important for highly powered FAI models.

## BOB HATSCHKE GADETS AND EQUIPMENT

From a Loser's Viewpoint: This is being written the day after arriving in Long Island after the 1600-mi. drive from Caddo Mills, Texas, and the U.S. 1973 Team Selections Finals. Placing well down the list of Nordic fliers, this gadgeteer fell far short of making the team. Since almost a hundred of the nation's top free fliers also failed to make the team, there's no cause for feeling shame, just a bit of disappointment—until next time.

It was a tough meet. The competition was tough. And the weather was tough. Winds ranged up to about 30 mph for the three days of official flying, and it wasn't even approaching calm at the 6:30 a.m. start of flying. It was hot, too, with temperatures in the 90s on most days, which made it particularly tough on the Wakefield fliers, who left a lot of broken rubber on the field. None of this is meant as an excuse. Rather it's a statement of the obstacles successfully overcome by the eventual winners. Win, lose or draw at next year's World Championships, they'll be a great U.S. team.

Who are they? In FAI power, the three team members are Henry Spence (Arlington, Texas), Frank Wolff (Massapequa, N.Y.), and Tom McLaughlin (Pensacola, Fla.). In Wakefield they are Bob White (Monrovia, Calif.), Frank Parmenter (Houston, Texas), and Jon Davis (Albuquerque, N. Mex.); and in Nordic

A/2 they are Hugh Langevin (Minneapolis, Minn.), Paul Crowley (Detroit, Mich.) and Vince Croghan (Baltimore, Md.).

The strong winds made model retrieval considerably more difficult than usual despite the fairly open Texas countryside. One of the most widely used retrieving aids was the trail bike, which is fairly effective and certainly fun. But it can also be dangerous. At least two motorbike retrievers ran into trouble—one in a hole on what appeared to be a smooth field, and the other into a couple of feet of water in what appeared to be nothing but lush grass. Neither was seriously injured, though one was taken to a hospital for a check-up when he appeared to be suffering from at least a mild concussion. So don't retrieve alone on a motorbike! It's a job for two—one to watch the model and one to watch where the bike is going. The same is true, of course, for retrieving with a car—you need a full-time driver and a full-time spotter.

One of the best-equipped and best-organized retrieving systems was the one used by the Brooklyn Sky Scrapers. With eight members flying (two in Power, two in Nordic Glider, and four in Wakefield), the Sky Scraper retrievers were a busy bunch. And after 15 rounds in the high winds they hadn't lost a single model permanently (some did take a few hours to find and return).

The principal piece of equipment they used was Frank Pualin's "optical tracking station." (See April 1972 AAM.) This consists of a pair of binoculars mounted on a camera tripod along with a telescopic rifle sight and a good compass. It was used in conjunction with an enlarged U.S. Coast and Geodetic Survey map of the area. As each Sky Scraper model either landed or went out of sight the distance (yes, with binoculars), its magnetic compass bearing was noted and plotted on a plastic overlay on the map. This sight line was then cross-hatched to indicate the estimated distance. Two members manned this fixed station and, with the aid of an additional pair of binoculars, they managed to keep track of as many as three airplanes in the air simultaneously.

This station, identified as "Sky Scraper Upwind," was constantly in touch by Citizen's Band radio with "Sky Scraper Downwind," the retriever command post about a mile from the launching site. The one member at this station, also equipped with binoculars, directed the retrieving crew, each of whom also had a lightweight Citizen's Band radio. The individual retrievers brought the models back to the downwind station, where they were picked up by car (several at a time) by the fliers.

For the really long flights, and some went several miles, the Sky Scrapers had the ultimate in retrieving equipment—a Cessna 170. This was generally after the day's competition was over, but it was a simple matter to fly over the model launching point and fly the compass heading plotted on the map. Not only did the airborne Sky Scrapers take care of their own, they also spotted a number of models belonging to other contestants, later sending ground parties to the locations marked on the map. One afternoon, they picked up eight strays this way and returned them.

There was one retrieve that was only partly successful, however. Sky Scraper Carroll Allen's Wakefields are covered with black tissue on the bottom surfaces so they show strongly against the sky. After a very long flight, the model apparently flipped over its back so it wasn't visible from the air. So Carroll took a compass and marched across the countryside on the recorded heading until he found the model. But by this time it had been chewed to pieces by an old horse pastured in the field where it landed. You just can't win 'em all!

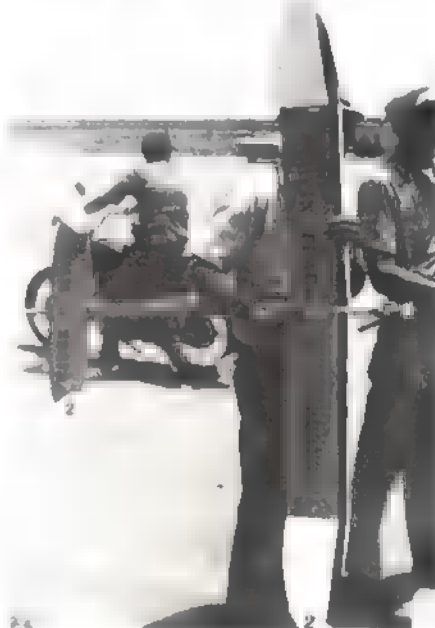
## BOB STALICK GLIDER, RUBBER AND POWER

FAI Team Selected: Caddo Mills, Texas was the place and the U.S.A. FAI team selection finals was the event. Starting at 6:30 a.m. July 1 and ending at 2 p.m. July 3, this was the big step on the road to represent the country in Austria next year the FAI Internationals. The weather was hot and windy



Earl Thompson led through 14 rounds at FAI finals, then dropped out with disastrous last flight. Note handle on his electric starter.

Don McGhee hides behind wing of his Cryin' Time FAI power ship. Highly warp resistant structures used.



and models were drifting downwind into the cottonfields, trees and town, but it was a great spectacle and a gathering of some of the top fliers in the country. Support equipment and personnel in these conditions almost mandatory. Citizen's Band radios, walkie-talkies, motorcycles and thermal detectors were in use throughout the contest, but those with the experience and the good models placed high, whether the support equipment they used was extensive or not. As a result, a strong representative team was selected, with experienced Internats contestants and newcomers placing in each event.

In Power the trendy thing to have was a high aspect ratio elliptical tipped wing covered with sheet balsa and MonoKote or Solarfilm and using a thin, flat-bottomed air-

Fuse is lit, rubber's wound, and Willard Smith is ready to launch at Caddo Mills FAI FF Finals.



foil. The fuselage was long, with a low to medium height pylon and rear fin. Rossi engines were definitely the standard power plant, usually mounted on a pan. Seelig timers operating auto-stabs and rudders. Stabilizers were smaller and smaller—in the 20% range on a few models. Flapped wings were seen only on the models flown by Ann Gieskieng and by Tom Koster, who came over from Denmark to compete.

High thrustline models were flown by only two contestants: Don Wensel with a Lightning Rod and John Rak with a Soarhead 84. Doug Joyce was competitive with the most unusual model on the field, his canard pusher, The Lightning. Unfortunately, many models were seriously bent by crashes into the runway or ground, presumably by bad launches and/or inability to handle the sometimes gusty wind conditions. The typical variable incidence power model must be grooved exactly in the launch or else it will flatten out in the climb and go roaring off on a cross-country flight that gains much speed but little else. With a good launch, such as Power winner Henry Spence had for each of his flights, a max is practically guaranteed because the height obtained in the ten sec. of engine run is phenomenal.

Even with the sometimes finicky habits, the auto-stab is here to stay and the flapper appears to be lurking just around the corner. Thinner, more symmetrical airfoils can be used with auto-stab, which boosts the climb speed at little sacrifice in glide performance.

A number of Midwest and Eastern area modelers flew versions of Bob Siffleet's Centaur design. This model, although similar in planform to the standard layout, is a stable and forgiving design that is of sound, basic construction with few frills. Its auto-stab mechanism was one of the simplest and most foolproof on the field.

There will be many articles and reports to read and hear on these finals. Modelers serious about the FAI program should learn all they can from them, then begin planning to participate in the 1975 program, which will begin next spring. In the FAI Power event, the above comments should give you some idea as to what the top fliers are using, but don't dismay, it may help to have fancy and expensive equipment, but many made it to the finals flying old Supertigre-powered models equipped with a Tatone Timer, DT fuse and no auto-surfaces. As in all free-flight events, any model equipped with any engine looks just as good in a thermal as any other. So, don't procrastinate. Spring and the '75 qualifying trials are just around the corner.

#### GUEST AUTHOR: CLARENCE MATHER SCALE

**Flying Scale at Taft:** The recent United States Free Flight Championships held at Taft, California, included Flying Scale events. It is good to know that some airplane chasers recognize Flying Scale as a bonafide free-flight event! Being an official event, points earned in Flying Scale counted toward championships. It was revealing to watch one prominent contest flier struggling to break 30 sec. with a Piper Cub.

There was a good number of entries although several southern California Scale enthusiasts did not compete. The weather was

**Drifting backward is Stinson Seaplane by Bill Pardoe.**



**Remember the Aeronca K? Here's one on floats by Pardoe. These birds take off quite gracefully.**

hot and breezy but not bad if you flew early. Jack McCracken, NAR Flightmasters president, proved that he has organizational ability equal to his superior scale building talent. Carl Hattrack, Scale event director, had serious car trouble enroute to Taft. Jack got word of this and sprang into action. Very soon tables, score sheets, and flight cards were set and Jack had a watch in each hand timing flights!

During the contest I discovered a way to wreck scale models. Two of my models, a PT-19 and a Stormovik, were in a cardboard box with the top closed but not tied. The box was sitting on a cot in a tent that had three sides open. A tremendous dust devil came along engulfing the tent and blasting everyone near with dust and debris. After it passed I suddenly noticed, with great alarm, that the model box was no longer on the cot—in fact it was nowhere in sight! Frantically I looked for the box and models. Soon the models were found upon the ground about 100 ft. from the tent. They were battered and torn but not nearly as much as anticipated. Later Fudo Takagi found the box a good quarter mile from the tent! This is the 13th year that the Stormovik has been flying so something had to happen to it!

It is often difficult to obtain a consistent circling flight pattern with rubber-powered scale models. Outdoors a wandering flight usually can be tolerated but indoors the model crunches into hard walls or bangs around chairs and bleachers. The causes of some of the circling problems are easy to understand. A tightly wound rubber motor generates several times the torque of a partially wound one. Thus the torque of the model, the propeller thrust, the model's speed, the propeller's blast, and the model's flight attitude all change considerably during a fully wound flight. If a model depends only upon offset rudder or only upon angled thrust, the direction of the circle and even its direction will probably change during the flight. Each design and often each particular model has uniqueness but I'll describe the trim adjustments that work well for me.

Most of my scale models are flown indoors in a small recreation center about 40 ft. wide, so there is not much room for a wandering flight! Most models are flown to the left. The rudder is offset about 1/32" from true straight. This is for models that as Peanut Scale weigh about 1/3 oz. and proportionally more in larger sizes. The ultralights will need more rudder offset and heavier models less.

To allow for change, the tail assembly is rather lightly spot-glued when first assembled. Thus it can be easily cut free for trim changes. The propeller is angled several degrees down and to the left. Many models will spiral dive when flown in small circles unless some wing "wash-in" is used. Looking at the model from the rear the left trailing edge should be down about 1/16". It usually is not necessary for the whole TE to be down that much, but the outer portion should be. This can be accomplished by building the wing that way or it sometimes can be warped in by steam. Also a small down elevator can be cemented to the underside of the trailing edge of the wing. Of course twisting up the right wing has about the same effect.

If the circle begins the proper size but enlarges as the motor unwinds, try more rudder

and less thrust offset. If spiral dives persist, even with wash-in, shim up the trailing edge of the stabilizer. Some models require considerable tinkering with the various adjustments before they will respond properly. The thrill of seeing a neat scale model roll across the floor then chandelle up into a smooth circling climb makes it all worthwhile!

## Control Line

### BILL BOSS SPORT AND SCALE

**Show of Shows:** Modelers take note! Here's a contest that you will not want to miss. Bob Lophshire, AMA's Director of Public Relations, has just announced a contest that should outdo any contest or modeling show that you have ever seen or participated in. The contest show is to take place at the Museum of Philadelphia Civic Center and will run from March 23 to April 19, 1974. The contest will be dedicated to modeling craftsmen featuring models of RC planes, cars, boats and CL planes, with approximately 200 prizes or trophies to be awarded.

The contest will be static in nature, and at this writing about 20 award categories have been established, many of which will have awards for all four types of entries. Some examples of the award categories being offered are: Largest Plane, Smallest Plane, Sport, Best Finish, Helicopter, Pre WWI, WWI, WWII, Post WWII Scale, Overall Best of Scale, Antique Ship to 1900, and so on. There are many other event categories assuring coverage of all facets of modeling in the four basic types of models featured. As time goes by, more information will be published on all aspects of the contest.

The contest, which is to be bi-annual, came about as a result of the recent public acceptance of the John Wanamaker, Philadelphia show and the personal observations by the Curator of the Philadelphia Museum. The Museum will present aeromodelling as an art form, and plans to spend the time and money necessary to accomplish that goal. They have 25,000 sq. ft. of floor space for display and hope to have it filled with models.

In order to make the contest-show more appealing to modelers, every attempt is being made to have major prizes for the winners. One example of a great prize being negotiated is a trip to Amsterdam and a visit to the Fokker Aircraft factory for the best model of a KLM-Fokker aircraft. Auto manufacturers and dealers as well as boat manufacturers and dealers are being contacted in the hopes of their providing major awards for the auto and marine categories. All in all, this contest-show promises to be one of the greatest, with the name of the game being "Get Your Hobby Before The Public."

Now that we've told you all about it, you have only 17 months left to design and build your entry. Now is the time to start. Watch the "Where The Action Is" columns as well as AMA's publications in the coming months for more details about this greatest of contest-shows.

**Sanding Blocks:** Need an odd shaped sanding block? One that can be used to get a nice even sanding job on a leading edge? Roman Bogatschow solved the problem by making sanding blocks out of scraps of polystyrene foam. Start with a foam block of sufficient size, about 3 x 4", and shape one side of the block similar to the shape of the wood to be sanded. Cut a piece of sandpaper to proper size and with a small amount of glue, cement the sandpaper to the hollow in the foam. When the glue is dry, sand away. By using this method you can make sanding blocks of any size and shape that will fit almost all of the curved or flat surfaces of your model.

**Scale Markings:** Many scale modelers (especially the beginners) enter a Scale contest with great enthusiasm and anticipation of piling up a good score, only to be disappointed when the judge gives him his final tally. The contestant finds that he did pretty well in the workmanship department, but was



Good coloring and markings with several working features on Bill O'Connors Wildcat. Fox for power. Anyone want to retract those gears?

low in the fidelity to scale portion of his score. Several reasons could account for low score, the most common of which is with color and markings and perhaps some of the detail work.

Remember that your model has to be a specific aircraft. That means that it must be painted, and marked in the same manner as the full-sized prototype. To substantiate this, you should be able to present photos (color if possible) and a good set of three-view drawings, as well as any other information that will

help the judges in giving you every point you deserve. Don't forget: It's your responsibility to prove that what you have done to your model is correct.

Detailing of the plane is important. Make sure that hatches, rivet patterns, antennas, guns, etc. are all in the proper location and size. In your first attempts scale it might be better to concentrate on a few details and be very accurate about their placement and size, and do an extremely good job of them rather than put on a lot of detail and an overall poor job.

One last thought: Scale builders are not made over night, it takes time, patience and work. Even the best had to start small.

## HOWARD RUSH COMBAT

Honkin' Engines: Lots of people hop up engines for hire these days. I propose a contest to see who's best. Hopper-uppers are invited to send me their engines for evaluation, after which they will be returned. Engines will be judged for starting (hot and cold), consistency of running in maneuvers, and level-flight speed on a Combat plane. Results will appear in this column. Write to Rush, c/o AAM for details.

What?: There's an alternative to going deaf from engine noise. Sonic Ear Valves are ear plugs that attenuate loud noises, but don't cut out quieter sounds. Designed for folks



Wild combat flight between Gary Frost (l) and Bob Burch (r) ended in a mid-air collision with both getting a kill. Gary's plane tells the story. His string has been cut, and Bob's kill zone is wrapped around Gary's engine. Writing on wing of Burch's remains says "Don't forget to fill the tank."



who shoot guns, they can be found in sporting goods stores for about five dollars per pair. Of course, you could use a muffler.

How Fast?: To get speed in mph, divide 1800 by time in seconds for seven laps on 60 ft. lines or for eight laps on 52 1/2 ft. lines.

Universal Slow Combat Rules: Slow Combat is here to stay, how about a standard rules system? Folks can use the same plane for contests in more than one place? Ron McNally, an engineering professor at Purdue and a competitor in both Slow and AMA Combat, proposes a streamlined set of Slow rules. By his system, AMA rules would be followed plus: (1) sleeve bearing engines are required, and (2) airplanes must have at least 350 sq. in. wing area and must be at least 24 in. long, measured from propeller to tail hinge line.

Ron favors plain-bearing engines with pressure fuel systems optional because it's the least expensive way to fly. "Suction fuel draw limitations are unreliable to the point of causing crashes," he claims. Also, experience gained by novices using a pen bladder or baby pacifier. Slow Combat is good training for AMA Combat, where competition dictates the use of a pressurized system.

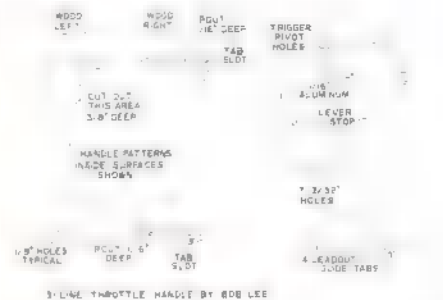
Ron rejects mandatory landing gear as adding to a plane's cost and complexity at the expense of performance. His area and length rules would rule out all existing competitive AMA Combat planes and would favor Ringmasters, Flite Streaks, and the like.

Rusty Motors: After running an engine with synthetic-oil fuel, squirt some light motor oil in the exhaust port to prevent rust. Synthetics make fine lubricants, but they need help when the engine is not running, particularly in damp weather.

## JOHN BLUM CARRIER AND STUNT

Throttle Handles: Much has been said about throttle handles and many types have made the scene. Bob Lee, writing in the San Jose (Calif.) Aero Modelers Newsletter, presents a workable throttle control handle that parallels even the most sophisticated in end result. The most important factor to many modelers is economy of construction.

The sketch doesn't show dimensions, but with a little effort the handle can be made. The grip portion, overall handle parallels the standard size E-Z Just two-line handle.



Converted Midwest P-51 comes out a FW 190 for Danny Blum (no relation to writer).

Veco 35 powers profile carrier Sea Fire for Mark Fechner. It has a combat Twister wing.



This is not a critical factor, since the grip portion can simply be made to fit the hand. The 1/16" thick aluminum trigger is 3-3/8" long. From center of pivot hole to center of innermost 3/32" hole is 2-3/8". The other two 3/32" holes are located at 5/16" centers. The trigger at the widest part is 2-1/4".

Lay-out handle plate and trigger on 1/16" plate and cut with coping or jig saw. Drill holes and bend tabs down, including trigger lever stop. Next cut wood handles from 3/8" stock. Cut tab notches and leadout line slots. Bolt handles and plate together, sand to smooth contours and disassemble. Bolt trigger to center plate, reassemble handle with leadouts extending 4", and dope finish.

Refer to the May 1972 AAM for method of constructing an inexpensive, but effective, three-line throttle bellcrank. Above handle will work with this crank or a Robert's crank.

Stunt Wings: Requests have been made for suppliers of foam wing cores suitable for UC Stunt. Here's two: Controlline Specialties, 3 Roger Court, Woodcliff, N.J.; Foam Flite, 628 West Sixth St., Mankato, Minn.

Line Tension Problems: More questions on this and a model's inability to pull out of a loop. Would require a book to define them all. Most problems pertained to 1/2A and Sport.

The following is a list of suspicions. Line tension: (1) no outboard tip weight; (2) no

*A New "C" Series Control Line Flying Scale Model*

# GREAT LAKES TRAINER

KIT C13  
SPAN 36"  
LENGTH 26½"  
.19 TO .35 ENGINES  
SCALE: 1¼" EQUALS 1 FT.

**\$14.95**

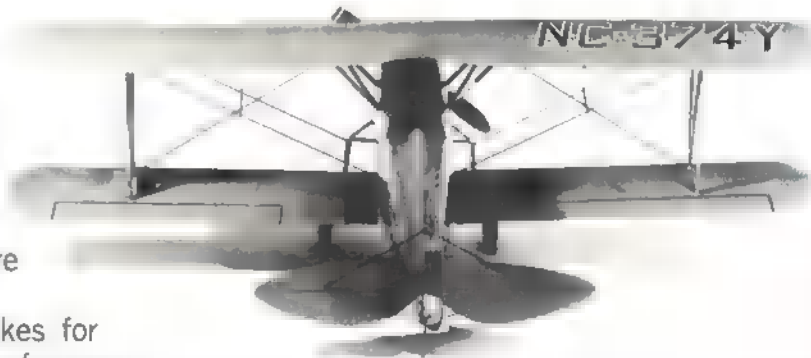


## *A Classic Bi-Plane Of The Golden 30's*

It's been a long time since our last addition to our great line of Control Line scale model kits . . . but the Great Lakes is — well — it's the GREATEST!

This marvelous airplane is the embodiment of all that the Golden 30's meant in aircraft. Its classic lines are just beautiful from any angle . . . and our model is a realistic miniature of its famous full size prototype.

Design simplicity and high pre-fabrication makes for easy building . . . and it delivers great flying performance like its big brother.



*Win the annual  
Sterling Scale Award*

**HANDSOME TROPHY  
PLUS  
\$100 CASH**

**Awarded for Best Scale  
Model at the NATS —  
Write A.M.A.**

## *And What About The Kit?...*

Finest quality Balsa is selected and graded — sanded smooth as silk to micrometer tolerances, then beautifully die-cut as are the plywood parts. Leading and Trailing Edges are shaped and notched. Formed Landing Gear is shock absorbing and kit also includes hardwood motor mounts, hardware, silkspan covering, plastic cowl, simple step-by-step plans, authentic decals and so much more. Check it at your dealer, you'll fall in love with it as we did.

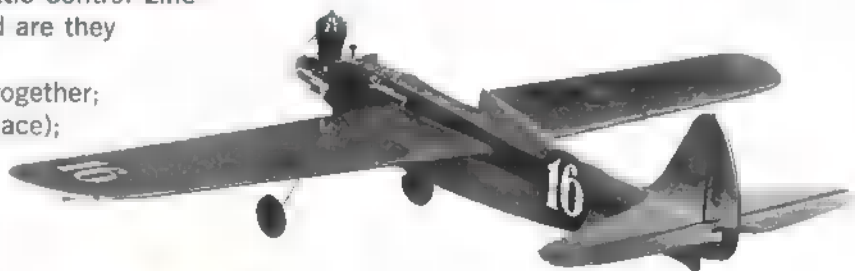
# and then... there were ten!

no — not little Indians . . . but 10 nifty little Control Line models that deliver real fun flying . . . and are they easy to build! Only 6 to 9 die-cut parts (depending on the particular kit) to glue together; a motor mount (that's ready to bolt in place); also the complete control system (less



KIT S40 BEGINNERS CHEROKEE

slight modification). A perfect ship to learn to fly on (first time flight instructions on the plan). They're great little flyers and so light you can't hardly hurt them. We've got 10 of them in the line now, 9 at \$2.95 and the Biplane at \$3.50. Tools you need are generally found around the house. So take a look at them at your dealer. You'll love them . . . and so will your pocketbook.



KIT S38 BEGINNERS SHOESTRING

handle and lines); decals, landing gear, wheels, etc.; which makes building a lark and assembly literally in minutes! Use any .049 engine (you might even have around from an abandoned ready-to-fly plastic job, it may require



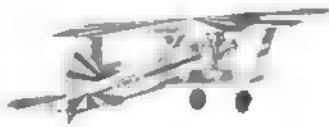
KIT S39 BEGINNERS THUNDERBOLT

**\$2.95** each

(except the Biplane which is \$3.50)



S-30 BEG. RINGMASTER 2.95



S-32 BEG. RING. BIPLANE 3.50



S-34 BEG. SPITFIRE 2.95



S-31 BEG. MUSTANG 2.95



KIT S-35 BEGINNERS THUNDERJET 2.95



KIT S-36 BEGINNERS SUPER CUB 2.95



KIT S-37 BEGINNERS EINDECKER 2.95

STERLING MODELS • BELFIELD and WISTER ST. • PHILA., PA. 19144  
If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., \$1.25 minimum outside U.S.)  
☐ Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories, etc. 25c enclosed.  
☐ "Secrets of Model Airplane Building." Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.  
☐ "Secrets of Control Line and Carrier Flying." Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed.

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

AVAILABLE  
IN CANADA





Eleven-year-old Matthew Bauer uses Enya 15 his Jr. Fille Streak. He's a most happy fella, nice building job.

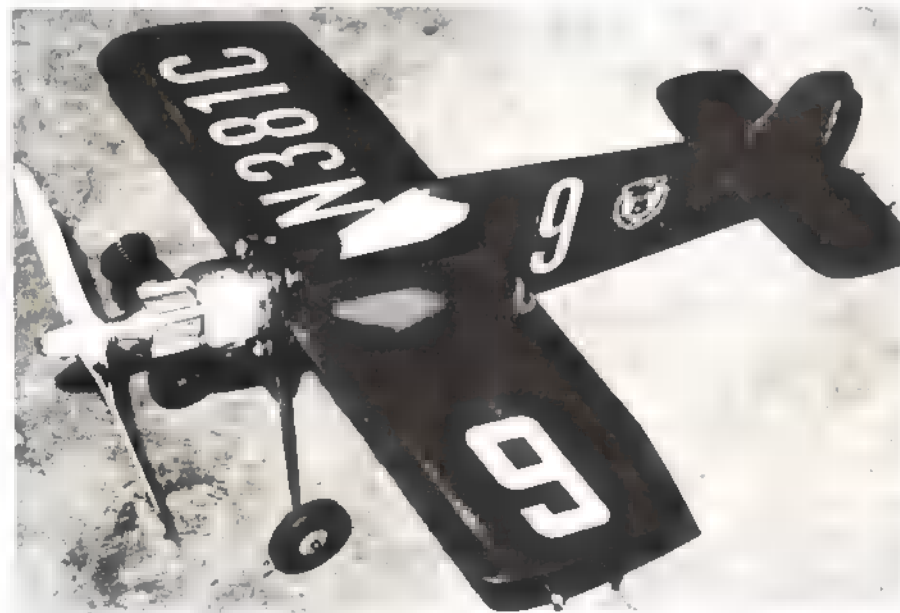
engine offset; (3) UC lines too long; (4) insufficient power; (5) lines too large in diameter and too heavy; (6) model extremely light for wind; (7) model too slow. Inability to loop: (1) model not designed for stunts; (2) model too heavy; (3) nose moment too long; (4) flat bottom wing; (5) tail moment extremely short in comparison to nose length; (6) flexing pushrod; (7) model too fast; (8) lines long resulting in loss of control; (9) insufficient elevator-elevator area; (10) insufficient wing area. Well, that's a few!

#### JOHN SMITH SPEED AND RACING

Formula V and Mouse Racers Equals Fun: In recent columns I have been mentioning the newest fad to hit the Control Line scene. In different parts of the country they are called different things. But every one agrees that the small .049-powered scale-like racers have added new blood to racing circles. It seems as if every club newsletter has mention of these little bombs. All state that Juniors who never before were interested in racing building them. Most of the models are built for the read valve Cox .049.

In Cleveland where the event was started, the rules state that only this type engine be

A Cassutt III Formula V (.049) built by Bob Sargent. Handles like a team racer.



allowed. Wingspans run from 12 to 14 in., models 3/4" scale profile, and are flown on 42 ft. lines. 48 to 54 laps per tank (Golden Bee) are common and some pilots have been seen test flying on 52 ft. lines! Any engine modification is allowed as long as over-the-counter parts are used. Fifty lap heat races, three models per heat, and 100 lap finals run. One pit stop must be made in each race. Designs call for over-sized stabs, about 20 to 25% of wing area, balance on or near LE. Kim LH props are being seen some. The reverse torque helps control takeoff. At least one major kit manufacturer is planning to get on the bandwagon with at least three models. If your club is running this event, let's hear from you. With everybody's ideas, maybe a set of national type rules can be written up. Should make a nice after-hours event at the Nats next year.

Like 'em Bigger, Try Slow Rat: Bob Compton (El Paso, Texas) says they're flying Slow Rat in our second largest state—300 sq. in. on the wing, 36" span, Profile, no pressure, hot glove, or fast fills. Add a two-oz. tank, two-wheel gear and a 40 up front. Fly for 140 laps with at least one pit stop. Mix well and you have the fastest growing event in the Texas area. Bob adds that the Juniors are running faster than the Open guys with pit stops averaging around 15 sec. This event ought to keep everybody happy. Something getting people interested in Speed flying. This year's Nats had 409 entries in Speed with 71 in Junior 1/2A Profile Proto. Hope the trend continues.

## Radio Control

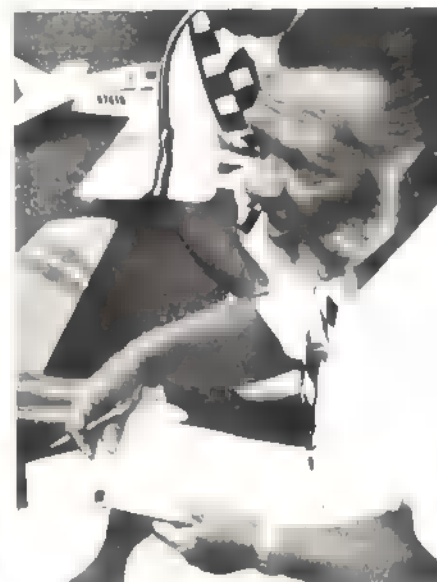
#### BOB STOCKWELL PYLON

NATS Predictions: As of July 13, Bob Smith is ninth in National Standings the basis of three races, whereas everyone ahead of him has had five more races. The simple truth about Bob is that you can't beat him by flying closer to the pylons. If you're closer to the pylons than he is, you have cut. So you have to go faster than he does. In 1971 there were some Supertigres that did in fact go faster than Bob—Terry Prather, Telford/Violetti. But this year Bob has as good an engine as anyone, and when his own isn't running, he has Roger Theobald's to put in instead (as at Bakersfield when he turned 1:27.9), or his partner Jeff Bertken's, or one of Larry Leonard's. There is no way he will be in the with less than the best K&B engine



Bob Smith, one of the men to beat, with a retractless P-51 going about as fast as the retractables.

Glen Spickler, Nats Pylon Director, assigns handicap points at local race.



around. Unless he has terrible luck, like a mid-air collision, I have to predict that he can't be beaten this year except under one condition: that someone comes up with an engine that is better than the best K&B, and flies nearly as well as Bob. Early in the season there was some hope that RAF might be able to do it. As of the date of this writing (July 13), there is doubt whether RAF will even have engines competing at the Nats. They will be good, we believe, when finally released, quite possibly better than K&B, but it now looks as if their year will be 1973. There are some top Supertigres around, some fine Aldrich engines, some Telford engines, some Prather engines. They are capable of beating almost anyone else flying a K&B, except Larry Leonard or Harold Coleson or Cliff Weirick or Garry Korpi on a given heat. But they do not have the torque of the Schneurles, though they have considerably more rpm. It shows in the turns.

I will also predict that the top two or three winners at the Nats will all be on the same frequency, that they won't have had to fly against each other. Last year it was 72.40 that picked up the first three positions. This year it will be 72.24. I hope I'm wrong.

I can't believe we will be as lucky this year about mid-air collisions as we were in 1971. I predict that the outcome will be in part determined by the luck of avoiding mid-airs. At these speeds it's not a matter of skill when you manage to stay clear.

I think we'll see several wings fold in the qualifying trials. The present speeds are increasing the wing stress exponentially.



Active again in a big way in Pylon is Joe Foster with a retractable tricycle-geared P-39 from Francis kit. Attractive model does not have distorted appearance of all the P-51s.

Chamber Maid by Bob Root is skillfully caught in flight passing a pylon by Ron Reed.



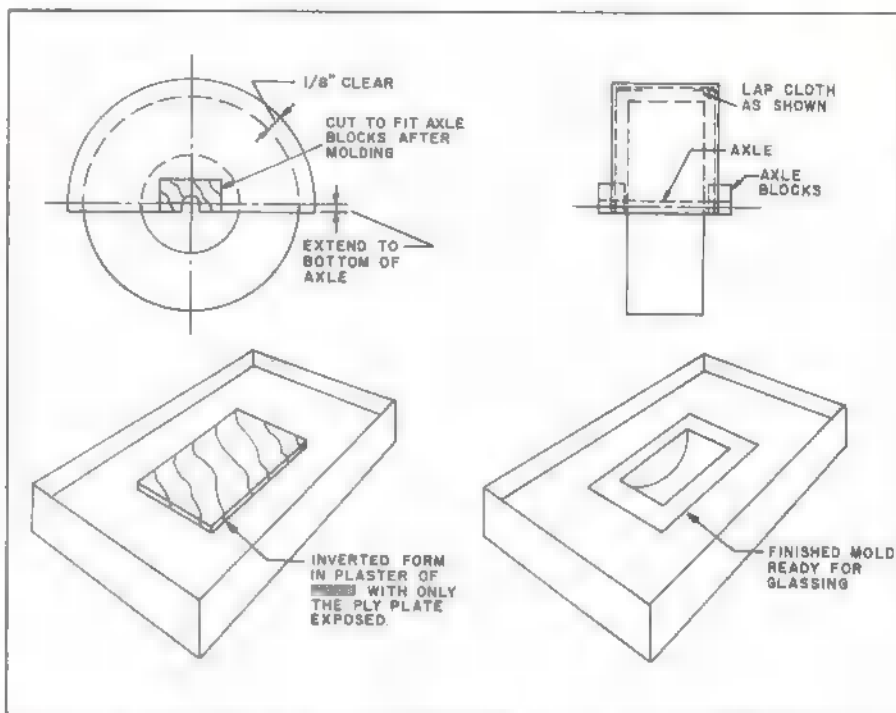
Let's hope my crystal ball is foggy on all but Smith winning. No one could deserve it more. He flies superbly, builds to perfection, and is a modest and sporting competitor.

**Editor's Note:** To see how close Correspondent Stockwell came to predicting the outcome of Pylon Racing at the Nats, turn to page 36.

## CARL MARONEY GLIDERS AND FAI

Molding Wheel Wells with Silicone: Editor Bud Faulkner published his idea for providing added realism to scale sailplanes in the ECSS Journal, "Sailplane." Feeling the basic method could be adaptable to new ideas he requested to share it with other modelers.

Here's a good way to keep dirt out of a fuselage for those who are using wheels. The well should be 1/8" larger in circumference and 1/8" wider in width each side of the wheel. Use a circle template to draw diameter of wheel on balsa form (see detail). Cut form to shape and mount with epoxy to a piece of 1/8" ply making sure of a snug fit with no clearance between the form and the ply. Finish the form with Hobbypoxy or balsa filler and Aero Gloss. Using several coats of Polyurethane applied directly to the sanded form will give good results, but this requires several built-up coats with sanding between them. After the form is complete, it is ready to be covered with silicone. G.E. white silicone was used and is available at hardware stores and marine supply outlets. Cover the form with a generous coat in a well-ventilated area. Silicone should be applied to cover form and plate. Allow to dry overnight. After dry-



## Making of fiberglass glider wheel well.

ing and before separating, mix plaster of Paris in a cigar box or any other container and lay the well in this inverted leaving only the 1/8" ply plate exposed.

After plaster cures, remove the well and separate the silicone from the form carefully. With a properly finished form, the separation will be smooth with the inside of the silicone mold. Set the finished mold back in the plaster form and it's now ready for lay up. Hobbypoxy Formula II works very well if it sets for about 20 min. before applying to the mold. The viscosity is higher than other polyester or epoxy resins without adding fillers to prevent runoff from the vertical surfaces. After mixing Hobbypoxy, the cloth can be cut while the epoxy gets tacky.

Cloth weight is not critical use scraps laying around the shop. Also, plain weave ten oz. cloth is good. The bottom of the mold (top of well) should be applied first; cut the cloth so that it sticks

out about 1/4" each end of the well. Next cut the sides so they project the same distance. Sides should lap bottom about 1/8" (see detail). Now lay the cloth aside and coat the entire model with the epoxy. Apply the cloth and check for runoff to prevent build-up of epoxy in bottom of mold. When about 80% cured and while still tacky, trim excess cloth from mold with a sharp razor. When cured, lift mold from plaster and peel away silicone.

To provide wheel support two wheel axle blocks are needed. Slot 1/2 x 1/4" spruce or ply blocks with round file to fit wheel axle. Bevel bottom to fit fuselage closely. Align wheel and spot-glue blocks to fuselage prior to adding well. Notch the sides of the well to fit ply blocks. The well should hug the fuselage closely at the bottom. Spot-glue wheel well in place and apply cloth and resin to secure to fuselage. The entire procedure will take only two evenings. Be sure to work in a well-ventilated area and away from any heat or furnace for safety.

# Special Interest

## JOHN BURKAM HELICOPTERS

Fuselage Design: All kit helicopters to date have fiberglass fuselages, and the helicopters made from these kits are rather heavy. Non-scale metal helicopters be built 20 to 30% lighter than scale fiberglass jobs of the same power and size. Few scratch builders of helicopters go to the trouble of making a mold and laying up a fiberglass fuselage shell. I predict a trend away from scale helicopters as interest turns more toward performance. Abetting this trend will be the development of a simple, easy-to-build, good-looking metal fuselage which protects the radio and servos from the exhaust fumes.

The fuselage design presented here is a step in that direction. Only the engine, pulleys and belts are outside the box. A large panel on each side is removable for access to the servos and the tail rotor drive. This model uses the same drive components as the original Tubie helicopter except for slightly longer shafts. A K&B 40 engine is used and should give a maximum thrust of about 14 lb. on the five ft. rotor. With an empty weight of six lb. including radio, there is a healthy performance potential, whether it be rate of climb, altitude, speed or load carrying capacity.

There are many ways to make a box. One

of them must be easier than the way I did it—separate pieces for top, sides and bottom. Recommended method: For the straight section, bend from one piece with seam at one of the lower corners where .032 x 3/8 x 3/8 angles are used as internal reinforcement to distribute the landing gear loads. Wrap the tapered section from one piece with the seam on the bottom. The tail boom is a piece of 3/4 x .035 wall 6061T6 aluminum tubing stepped down to 1/2" tubing just before the bend ahead of the tail rotor. Up in front the fan is shrouded to force cooling air to pass through the engine cooling fins. Rotor downwash velocity is only five to eight mph in this area, not enough for cooling even if a heat

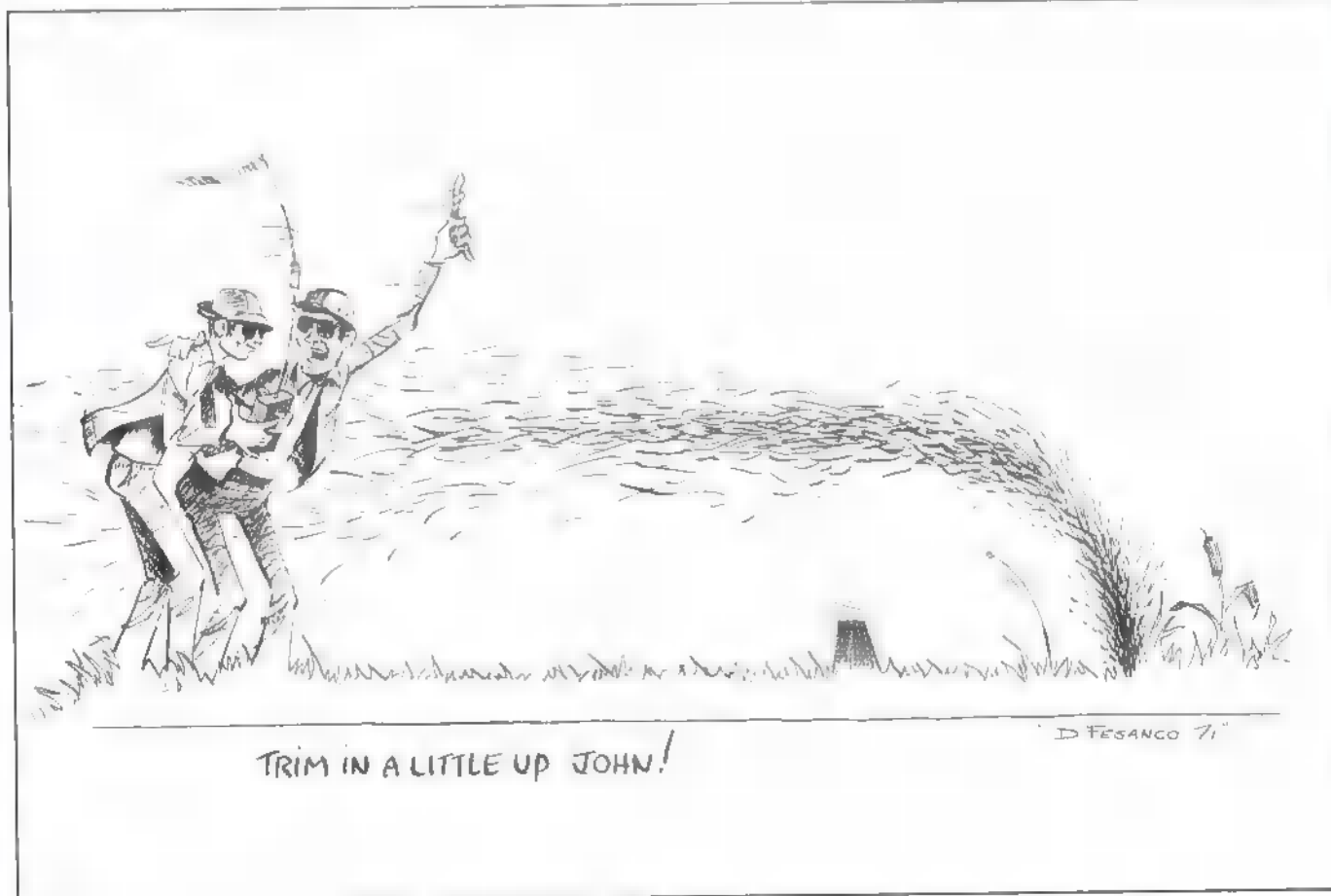
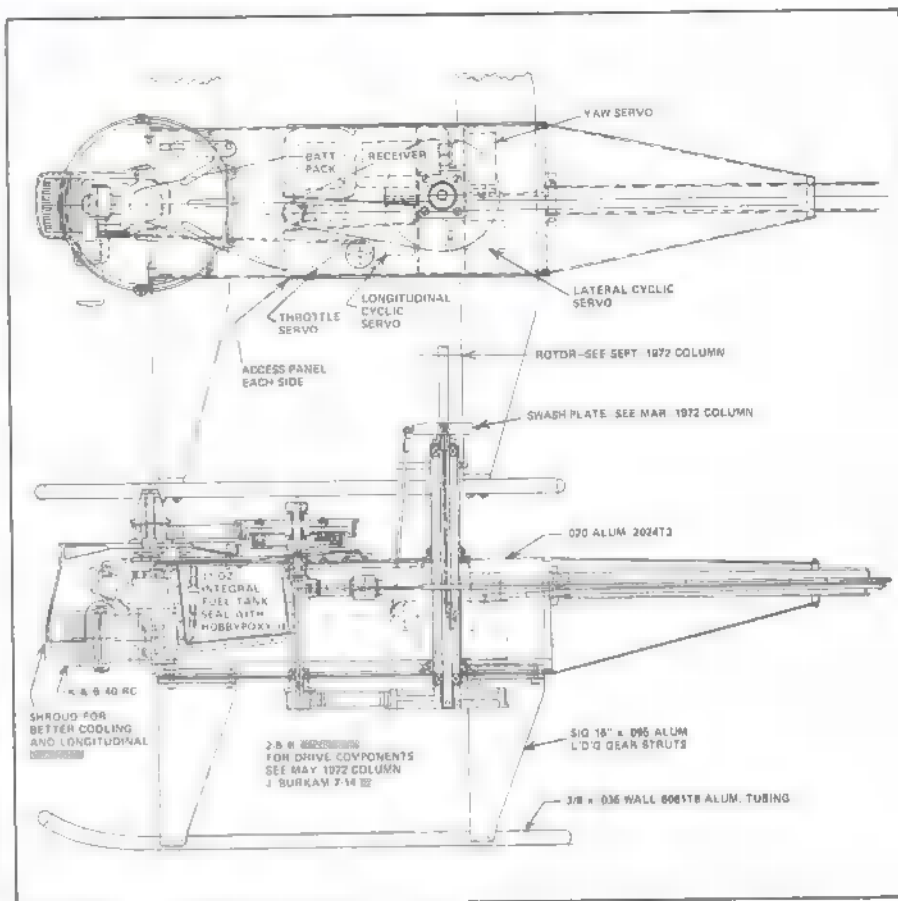
Next-to-latest version of SSP by Gene Rock has more realistic fuselage and tail rotor drive by 3/32 mw torque rod.



sink is used. The shroud also prevents the fan from exerting a varying lift force on the fuselage and upsetting the balance of the model when you least want it. With just a little more effort, even the pulleys and belts could be enclosed on this model.

On the prototype pictured, .020 thick 2024T3 aluminum was used, but the box is so strong that .016 could easily have been used. Soft aluminum from hardware stores may require thicker gage or more reinforcing. Metal Good Div. of Alcan Aluminum Corp., Norcom and Charter Roads, Philadelphia, Pa. 19154, will accept orders of \$25 or more and will deliver in the Philadelphia area. Consult your Yellow Pages for a local source. The pop or blind rivets available in many hardware stores are neat and quick to use. Steel, 3/32 dia. rivets are recommended and seem to work even in rivet guns which are only supposed to take 1/8 or larger rivets.

Wind Tunnel Free Flying: Gene Rock established what may be a world's first when he flew his SSP-4 helicopter in Boeing-Vertol's 20 x 20 ft. wind tunnel with wind on and without benefit of tethering lines. Speeds to 25 knots were flown, and a sling load consisting of a miniature telephone pole was carried during parts of the tests. Ceiling effect was noted one time when the model came too close to the ceiling and sucked itself up. The friction on the blade tips along with the pilot's chopping throttle caused a sharp drop in rotor rpm, but the big Enya 45 engine managed to rev up the rotor in time to prevent damage on landing. At 25 knots, the model wanted to pitch up or down if disturbed from equilibrium conditions—in other words, a slight static pitching divergence. Reduction in collective pitch of the Hiller servo paddles from about 10° to zero collective improved handling qualities at high speeds. With more practice, it should be possible to hold the model within two ft. of a given point. This new technique of testing in a wind tunnel opens up new possibilities of studying stability and control and helicopter-sling load compatibility.



# WOW

**Two more ready-to-launch rockets from Cox.**

**X-15:  
to the  
edge  
of  
space**



Streaching to a speed of 4,500 mph and an altitude of 350,000 feet, the rocket propelled X-15 carried astronauts like Neil Armstrong to the edge of space.

Cox's authentically detailed scale model (13" in length) gives you a vivid and exciting re-creation of those early flights. Its solid-propellant engine thrusts it off the launch pad toward space. Then, as it passes maximum altitude, it deploys a re-entry parachute to land safely, ready for another thrilling flight.

Cox's X-15 is molded of high impact plastic, has accurate NASA markings. Comes complete and ready to launch for less than \$6.00. Fly it today.

Lift off!

And up, up to the very frontier of space streaks Space Shuttle America, the hypersonic transport, carrying shuttlecraft loaded with men and materials. At NASA ground control, the signal is given and the shuttlecraft leave the mother ship to fly their cargo on to an orbiting space station. Unloaded, they return to earth to rejoin the mother ship for another trip.

Cox's exotic Space Shuttle America captures in realistic miniature the excitement of this excursion into space. It blasts off, climbs to altitude, then separates. The mother ship parachutes safely to earth. The two shuttlecraft glide gracefully in a circular "re-entry" flight to a perfect landing.

Space Shuttle America includes: Beautifully styled transport. Two detailed delta wing re-entry gliders (designed for catapult launching if desired). Engine retainer ring and flameproof ejection wadding. And extra detailing decals.

A fascinating glimpse into the future of space exploration. Approximately \$8.00.

At hobby, toy and department stores.

**Space  
Shuttle  
America**



**L. M. COX MFG. CO., INC.**

1505 East Warner Ave., Santa Ana, California 92705  
A subsidiary of Leisure Dynamics, Inc.

Send 25¢ for a full-color brochure of Cox gas-powered planes, cars, rockets and accessories. Address Dept. AA-11



# 1-2-Punch!

Our new low battery drain integrated circuits are working well (1) in the field (2) in the plant. Thorny production and set-up problems have melted. So . . . we are:

1. Adding a fifth channel to the Pylon Midget Single Stick (\$10 more) \$285.00.
2. Producing all Blue Max systems as 6 channel outfits (4 servos) and adding only \$10.00 to the 4 channel price—\$330.00 + \$10.00 = \$340.00 and remember our Blue Max 12 volt set comes with Buddy Box—a deluxe set.

is best to be quite familiar with the procedures. We plan to discuss this in a future "Where The Action Is" column.

The receiver has a double-tuned front end, the usual 455 kHz IF strip and a stage of output squaring. The detected output is fed back to all IF stages for ACC. The output pulse train is fed to the decoder where the clock and reset pulses are formed by discrete components. Decoding is performed by an SCS for each channel.

The servos feature the use of an IC amplifier by Texas Instruments with discrete, passive components for trimming and damping. These are mounted in D ■ R Bantam DS2P mechanisms.

Interconnections are via a miniature plug block with separate plugs for fifth channel and power supply. Charging connection is made via the same power harness.

The test system had a separate in-line failsafe device with it which could be used with most any digital system. It simply plugs into any desired receiver output to a servo and the servo, in turn, plugs into the failsafe.

The failsafe functions as follows: It detects the presence of the incoming servo control pulses arriving at 60 times per second; so long as the pulses are present, pulse omission detector (POD) remains deactivated and the control pulse is passed on to the servo. When a pulse is not present, for example during a loss of signal to the receiver, for a period of one second, the POD activates to start a reference pulse generator the output of which now controls the servo. The width of this reference pulse may be set by means of a tiny trim pot on the failsafe board to position the servo at any point in its normal range of travel. If used for "fail-soft," i.e., low throttle, the throttle servo could be run to full cut-off. At any time signal is regained, the servo will return to its original commanded position.

Near the end of our evaluation, a new IC decoder was sent to us by Silver-

**Transmitter Dimensions<sup>1</sup>:** 6½ wide x 6½ high x 2 deep

**Receiver Dimensions:** 1¼ wide x 1-1/8 high x 1-5/8 long

**Servo Dimensions:** 7/8 wide x 1¼ high x 1-1/8 long (Length includes mount lugs, height includes output arms)

**Battery Pack Dimension:** 1¼ x 1¼ x 2-1/8

**Average Servo Thrust:** 2.5 lb. at 11/64 in. radius. Torque equals 0.43 in.-lb.

**System Linearity:** (See plotted resolution curve)

**Airborne Weight:** Approximately 12 oz. with four servos and without failsafe

**Transmitter Power Supply:** 9.6V

<sup>1</sup>All dimensions in inches.



**WORLD ENGINES**

INCORPORATED  
8250 ROSSASH AVE.

45236

tone and installed in place of the SCS decoder. The decoder utilizes three SN74L73 dual J-K flip-flops for decoding. Performance of the system is essentially the same with the IC decoder; however, reliability should be significantly improved.

Performance of the system was quite satisfactory. Temperature tests at 0°F and 150°F were satisfactory although one servo slowed perceptibly at 0°F. The average torque for the four servos tested was 0.43 in.-lb. This compares with a nominal 0.70 to 0.90 in.-lb. for most systems we have tested. The output thrust of 2.5 lb. at 11/64 in. radius was quite adequate for the helicopter.

In addition, we were informed by John Foy, president of Strato Model Products, that they would be using Orbit PS-6 servomechanisms. Measurements were made of torque for a set of these servos and an average value of 0.83 in.-lb. was obtained, a considerable improvement over previously measured servos.

## WARLOCK

(Continued from page 44)

To cut out the 1/4" dowel holes in each rib, round up 1/4" dia. brass tube and grind away the inside edge of one end using a conical grinder (Dremel tool). Hone down and polish this edge to a razor-like character, and punch out the required holes.

The formed leading edge is made from a piece of 6 x 36 x 3/32" sheet which has been soaked in steaming hot water for an hour. If possible, find an old tapered wing, and wrap the wet wood around the leading edge and tape it in place until dry. This process may have to be repeated to make the wood hold a tight curve. Then take it off the old wing, trim it, and glue it to the new wing (formed leading edges are needed for both sides).

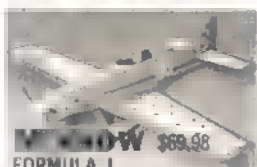
Our home-brew wing-jig consists of two 1/4" steel rods supported evenly at each end by clamps. Note that the rods go through the wing at an angle. Slide the ribs into position—carefully! First, slide all the ribs into position on the back rod and tape them to the rod so they do not slide around. Then slide the front rod through the remaining holes with a twisting motion (you'll probably need help to keep things in position).

Splice together enough soft 1/2" balsa to form the rough shape of the flying stab (it should be full-span). After all the edges are squared up, imbed the 1/2" brass tube in the stab (see plans). Then flow five-minute epoxy into the gaps on both sides of the tube until the glue is flush with the surface. At this point, rasp and sand the stab to an airfoil shape using the brass tube as the peak of the camber. When satisfied with the shape, run it through a bandsaw along the lines shown on the plans to cut out the center section. Cut out the top and bottom of the center section brass tube to obtain a 1/2" square hole. Slide in the torque tube, and solder the tiller bar in position. Install the center section on the fuselage, and slip on the 1/32" spacers and stabilizer halves. Fasten with sheet metal screws, two on

## NEW PILOT ARTF'S



**GULF \$39.95**  
This sharp looking aircraft is designed to fly as elevator, rudder, and motor. It is a relatively large 3 channel airplane, 52 1/2" span. The manufacturer recommends a 20 but would probably fly as a 35 O.K. Nice vacuum formed fuselage, balsa elevator, molded foam wing with solid dihedral brace. Model also includes steerable nosewheel. A little larger than the Pilot Cherokee and Olympia. Worth the additional \$5.00.



**FORMULA 1 \$69.95**  
This model features the same type of vacuum formed fuselage and foam wing construction used in the popular Pilot Cavalier. The wing span 49.6". Length 39.37" (1 meter). Wing area 461 sq. in. Engine 4 cu. in. Weight approximately 5 lbs. This almost ready to fly pylon racer with racing lines, wheel pants, should make active pylon racing possible for the modeler busy to build. This is particularly important in this rugged event.



**PHANTOM \$18.95**  
The Phantom is an almost ready to fly U-Control model constructed of ABS plastic and wood. A very striking looking sidewinder. Wing span 25". Length 25". Wing area 192 sq. in. Recommended 15-19. Flying weight approximately 1.35 lbs. Here is a chance for some U-Control flyers to enjoy the advantages of A.R.F. package.



**BEAT-X \$13.95**  
This is a U-Control combat trainer for a 20 engine. Wing span 30". It is a composite wood and vacuum formed aircraft. Even the landing gear is a ringer.



**STOL \$14.95**  
71" SPAN R/C  
This glider is the Pilot Thermal's little brother. Foam wings. Vacuum formed fuselage with a plywood pod. Manufacturer recommends an .06 engine. .049 engine would probably work well.

# SERVICE EXPERTS

## ARIZONA

R. C. Engineering  
P.O. Box 451  
Scottsdale, Ariz. 85267  
Phone 520-465-5700

## CALIFORNIA

Hobby Center  
Dept. of Dept. C & E Seminar  
451 March St.  
San Jose, Calif. 95128  
Phone 408-281-5400  
After 5:00 PM call 408-281-5401  
Typical of all R. C. Systems

## COLORADO

Hobby Electronics & Hobbies  
P.O. Box 100  
Avon, Colo. 80010  
Sales, repair, and  
instruction of all  
models of R. C. Equipment  
Phone 303-738-1025

## FLORIDA

E. W. Bryant R. C.  
Box 410  
Punta Gorda, Fla. 33950  
We service all types of  
R. C. gear—also build radio  
kits & model kits  
Hobby Center  
3001 N.W. 7th Ave.  
Miami, Fla. 33135  
Phone 305-444-4444  
The Hobby Shop  
257 Hwy. 17-92  
Casselberry, Fla. 32709

## GEORGIA

Hobby Electronics  
4 Ave. State Road  
Aventura, Fla. 33150

## ILLINOIS

Stanley Hobby Shop  
4718 W. 44th St.  
Chicago, Ill. 60629  
Cincinnati  
Rt. 92, Box 204  
Box 50  
Thornton, Ill. 60176  
Radio Control Central  
Box 100  
Chicago, Ill. 60605  
Phone 312-548-9225

## LOUISIANA

Walter Mathis, Inc.  
5731 Antebellum  
New Orleans, La. 70117

## MICHIGAN

Hobby Center  
1801 E. Grand Ave.  
Ann Arbor, Mich. 48101  
Phone 313-761-1111  
1414 East 10th, Commerce  
Ann Arbor, Mich. 48106  
Hobby Shop  
1000 E. Michigan  
Ann Arbor, Mich. 48106  
J. H. Hagan  
1000 E. Michigan  
Ann Arbor, Mich. 48106  
Cincinnati, Ohio 45201  
Quincy and Quincy

## MISSOURI

C. A. Hart  
1801 E. Grand Ave.  
Ann Arbor, Mich. 48101  
Cincinnati, Ohio 45201  
Quincy and Quincy

## MISSOURI

C. A. Hart  
1801 E. Grand Ave.  
Ann Arbor, Mich. 48101  
Cincinnati, Ohio 45201  
Quincy and Quincy

## NEW HAMPSHIRE

Hobby Electronics  
P.O. Box 100  
Avon, Colo. 80010  
Sales, repair, and  
instruction of all  
models of R. C. Equipment  
Phone 303-738-1025

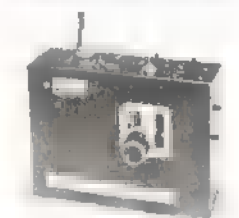
## NEW JERSEY

C. A. Hart  
1801 E. Grand Ave.  
Ann Arbor, Mich. 48101  
Cincinnati, Ohio 45201  
Quincy and Quincy

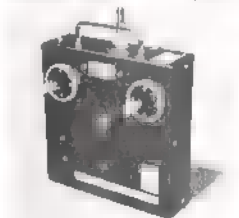
## NEW JERSEY

C. A. Hart  
1801 E. Grand Ave.  
Ann Arbor, Mich. 48101  
Cincinnati, Ohio 45201  
Quincy and Quincy

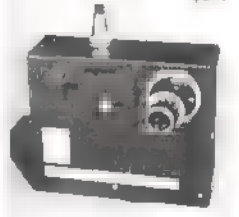
## OUR R/C LINE INCLUDES:



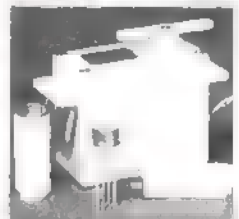
## WORLD'S EXPERT'S SERIES



## MK II BLUE SYSTEMS



## NEW PYLON MIGIT



## S-5 ASSEM S-5 SEMI RETRACT



## CATALOG

Price - \$1.00



# WORLD ENGINES

8960 ROSSASH AVE. CINCINNATI, OHIO 45246

# For Your R/C Flying Fun!.



Have Fun--  
Fly the Simple System:

## pulse commander



The Pulse Commander Rudder-Only Systems now have greater flexibility than ever. Connectors are wired into the Flite Paks to let you switch receiver from plane to plane. Latest Flite Pak gives 50% or more flying time per charge. COMPLETE Flite Pak weights, including nicads, run from 2.5 to 4.8 oz. New transmitter design has 50% more power output.

**FULLY PROPORTIONAL**--Pulsing rudder follows the movement of your stick by dwelling longer in left or right.

**SIMPLE**--Easy installation; actuator has only one moving part. Minimum maintenance required.

**INEXPENSIVE**--Initial cost of system includes nickel cadmium recharger batteries with charger. Transmitter and receiver can be used in many different installations.

**VERSATILE AND LIGHT**--See chart below.

### PULSE-COMMANDER R-O SYSTEMS

Completely wired and tested, with transmitter, receiver, actuator, nicad battery air-borne pack and charger, switch and connectors. Transmitter battery not furnished.

10G15--Baby System '72	\$69.95
10G15T--Baby Twin System '72	\$72.95
10G16--Standard System '72	\$71.95
10G17--Stomper System '72	\$74.95
26,995, 27,045, 27,095, 27,145,	27,195
Please Specify Frequency	

### R-O PULSE HANDBOOK WITH UPDATED CATALOG

Only \$1.00

Handbook has expanded data on How Pulse Works, Installation, How to Fly -- and much more. Most complete information on Pulse Rudder-Only available anywhere.

New catalog is completely updated. Includes many items from major manufacturers.

Price is \$1.00 via THIRD CLASS BULK MAIL. If you wish faster delivery, add 50¢ for turn around FIRST CLASS service.

ACE RADIO CONTROL, INC. • 381 • HIGGINSVILLE, MD. 21037

NAME _____				
ADDRESS _____				
CITY _____		STATE _____		ZIP _____
QUANTITY	STOCK #	NAME OF ITEM	PRICE	TOTAL

Master Charge or  
BankAmericard No.

Add \$1.00 shipping-handling for  
direct mailorders except catalog

### THROTTLE CONTROL SPECIAL!

For a limited time we will add the KRD Throttle Control, and make the transmitter conversion for the Fast Pulse button, for only \$25.00 -- direct orders from customers for a Standard or Stomper Unit. This is a savings of \$6.00.

Simply ask for KRD SPECIAL 72-25 and add \$25.00 to your order. (Offer not good for Baby -- Baby Twin).

Good until December 31, 1972.

### FLITE PAK WEIGHTS ■ RECOMMENDATIONS

Complete weight ■ each unit and suggested application:

Unit	Weight	Recommended
Baby	2.5 oz.	Pee Wee .020 Up to 48" gliders
Baby Twin	2.7 oz.	Tee Dee .010-.020 Up to 72" gliders
Standard	4.4 oz.	.049 ■ .10
Stomper	4.8 oz.	Tee Dee .049-.23

### ACE MINI FOAM WINGS

These jobs are being used by more and more modelers to ■■■ up with their own designs. See recent issue of AAM for P38 and RCM for Mr. Mulligan. Ideal for 1/2A Racing and other planes of semi-scale or fun types.

Constant chord measures 35" span, 5 1/4" wide, area 192.5. Weights 3+ ounces.

Taper section is 35" span, center 5 1/4, which tapers to 4"; area 166.25. Just over 2 ounces.

13L166--Ace Mini Foam Taper Wing	\$2.95
13L192--Ace Mini Foam Constant Wing	\$2.95

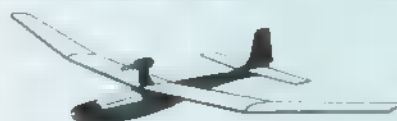


### DICK'S DREAM KIT

Highly Recommended for Beginners

- † 34" Foam Wing--Moulded sections
- † Top grade die-cut wood parts
- † For .020 engines
- † Commander Baby or Baby Twin
- \* Owen Kampen design

No. 13L100--Dick's Dream Kit \$6.95



### ACE HIGH GLIDER KIT

- † 70" Foam Wing -- Moulded sections
- † Precision Machine cut and sanded wood
- † For .049 Power Pod parts supplied
- Recommended for Rudder-Only
- Standard or Stomper Commander
- \* Owen Kampen design

No. 13L104--Ace High Glider Kit \$14.95



### SKAMPY KIT

If you have mastered Rudder-Only pulse proportional flying, and are looking for new ventures, the Skampy is for you. Resembles a stand-off Goodyear Scale Racer. Owen Kampen touches in both the design and kit assures the experienced modeller of a satisfactory RO pulse experience. It is NOT recommended for beginners.

Has 30" span wing cut from Ace mini foam tapers. Construction of the fuselage is a bit harder than a box type, but still simple for modellers with experience. Fuselage is 23 1/2", recommended power is Tee Dee .020. Recommended radio installation is Commander Baby Twin. This makes total weight of 12 to 13 oz.

Kit contains taper foam wing set, precision band sawed and sanded top grade balsa and hardwood parts, Bent landing gear, wire for torque rod and plastic bearing, and hinge material is also supplied. Wheels and engine mounting hardware not included.

Full step by step instructions make this a simple job for the experienced RO flyer.

No. 13L103--Skampy Foam Wing Airplane Kit \$6.95



### 2T KIT By Ron Jacobsen

Uses two sections of the Ace Mini Foam Taper Wings, and ■■■ Constant Chord section for a total span of 50 inches, 262 sq. in. Coupled with an .049, the 2T was designed primarily for the two channel Brick type digital that are on the market, or two servos of any digital system.

Also, when constructed correctly, it performs exceptionally well on Rudder Only using the Commander Standard or Stomper. Motor control can be added to at a later date by using the KRD motor control.

Kit contains three wing panels, all balsa wood completely band sawed and precision sanded, bent landing gear, and miscellaneous parts. Is of the same general high caliber as previous Ace kits. Hardware for hinges and linkage and wheels is left to the buyer.

No. 13L106--2T Foam Wing Airplane Kit 14.75  
No. 13L206--Three Foam Wing Sections 5.00  
For 2T



### UPSTART 1/2A RACER KIT

- † Midget Racing Just For Fun!
- † 34" span, 6" chord, 200 sq. in. foam wing
- † Top grade band sawed wood
- † .049 to .051 Tee Dee Engine
- † Two channel operation
- \* Owen Kampen design

No. 13L102--Upstart Custom Kit \$10.95

## ACE R/C digital commander

- Two channel system using IC's and latest state of the art; may be expanded to 4 channel.
- Receiver-Decoder will work with ANY modern 4-6-8 channel digital transmitter on same frequency! Reads aileron and elevator signals-ignores the rest.
- Receiver-Decoder works any modern digital servo.
- Receiver-Decoder offer inexpensive way with your present system for glider, plane, boat or car: with extra you already have. Or our combo flite pak: receiver-decoder, two servos, etc.
- Available on the following frequencies:  
27.995, 27.045, 27.095, 27.145, 27.195  
53.100, 53.200, 53.300, 53.400, 53.500



### digital commander RECEIVER-DECODER KIT

IC's simplify wiring and set up of 2 channel decoder. Receiver is conventional double tuned front end using discrete components. Complete with detailed step by step instructions.

- No. 12G20—Digital Commander Receiver-Decoder Kit \$27.95  
(Less case, connectors, switch)  
Please Specify Frequency

### digital commander SERVO KIT

Housed in the D ■ Bantam DS3P mechanism, uses WE 3141 IC for ease in assembly. Kit contains motor, pot, wiper and all components required, with step-by-step manual.

- No. 14G20—Digital Commander Servo Kit \$25.95  
No. 14G20L—As above, except with D & R DS2P Linear Mechanics (Less connectors) \$26.95

### digital commander FLITE PAK KIT COMBO

If you intend to use Commander Digital with your multi digital transmitter, all you need are the receiver decoder and 2 servo kits. Combo offers savings over kits purchased individually. Includes 3 connectors, switch, hookup wire for cabling. Everything you need to make complete 2 channel-2 servo pack for your sailplane, boat or car, except batteries.

- No. 12G30—Flight Pak Combo \$69.95  
No. 12G30L—As above, but with D & R DS2P Linear Mechanics 71.95

Please Specify Frequency

For complete listing of Transmitter and Combo Pak, Batteries, Packs, Connectors, or components and PC boards—see our Handbook-Catalog. Price is \$1.00 BULK Third Class. \$1.50 via First Class.

## digital commander TRANSMITTER KIT

IC's make the encoder a cinch, and easy conversion later to 4 channel. Built up to a standard of excellence, not down to meet a price. Complete kit with step by step instructions.

- No. 11G20—Digital Commander Channel Kit \$49.95  
(Please specify frequency)

### COMPLETE KIT COMBO

Consists of Transmitter Kit, and all parts of Flight Pak Combo. Saves. Available on 27 and 50 mHz. spots. Without battery pack.

- No. 10G2—Digital Commander Kit Combo \$117.95  
(Please specify frequency)

### BATTERY & CHARGER OPTIONS

White alkaline energizers may be used for Flite Pak. Nicads are recommended—4.8 volts.

- |  |      |
|--|------|
| 38K33—Nicad 225 ma Cylindrical cells                       | 2.00 |
| 38K50—KRD Flite Pak for above (4)                          | 1.00 |
| 38K35—Nicad 450 ma Cylindrical cells                       | 2.50 |
| 38K8—D ■ R Square Pack for above                           | 1.95 |
| 38K77—XL-ent 4.8v 500 ma button pak                        | 8.98 |
| 34L10—XL-ent 225 ma charger kit                            | 3.95 |
| 34L11—XL-ent 500 ma charger kit                            | 3.95 |
| 34K22—Varicharger kit                                      | 7.95 |
| 34K21—Varicharger, assembled                               | 9.95 |
| (Varicharger will charge both 225 and 500 and other packs) |      |

- No. 38K54—Mallory 1603, 9 volt Transmitter Battery 2.25



## ALL STAR BIPLANE KIT Designed by Roman Bukolt FOR UP TO .15 ENGINES

The ALL STAR Biplane by Roman Bukolt is a real winner—and will appeal to old timers and newcomers alike. Fashioned after some of the EAA home built as well as the nostalgic planes of the 30's, this design overcomes most of the problems encountered in the building of biplane simple with easy construction of the struts and cabane.

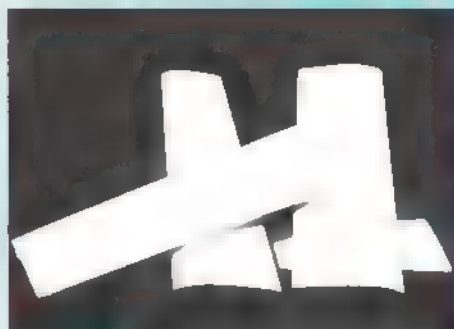
Modified Ace Foam Taper sections are used—again a simplification and an assurance of exact duplication of wings.

Span is 34". Area 350 square inches. Designed for .15 to .15 power. Use with .15 and three channels, .09-.10 for two channel OR with .049 and Rudder Only Pulsel Truly an All Star.

Kit contains 60 precision band sawed and sanded balsa, spruce and ply wood pieces, two of Ace taper foam wings, miscellaneous wire parts, and complete step by step building instructions. (Wheels and pilot not supplied.)

- No. 13L200—Ace ALL STAR Deluxe Biplane Kit \$21.95

TRY YOUR DEALER FIRST—if he does not have it, order direct using coupon on opposite page for fast and courteous service.



Dear Friend:

The photo above is of the Ace Foam Wings. The reason we're bringing this up again is that probably no design of a set of wings has done so much for so many.

Designed by Owen Kampen with small aircraft in mind, they are being used with modification in biplanes such as the All Star, and triplanes such as the Sopwith by Fred Reese, and 1/2 A midget racers of all types. You it—chances are someone has built a sort of scale or type of aircraft using the Ace Mini Foam Wings.

AAM will have plans by John Chapls for a low wing Ryan. RCM will have at least two designs by Fred Reese as well as several others.

Invite you to keep watching the magazines—we believe you ain't seen nothing yet. It is our opinion that no foam wing design has had the versatility of these mini jobs by Owen Kampen.

Pulse rudder growing like mad in all sections of the country. Not only for the beginner, but more and more we are finding that the systems being put into small craft by many a full house flyer who wants the "instant" fun that a small ship will provide. Some clubs are even having Pulse R-O contests!

If you haven't investigated the pulse proportional story, by all send for our latest Ace catalog, detailed on our coupon. Get in on the fun.

Another interesting rudder only application is the Questor by Airtronics. A Stomper gives amazing and very satisfying results. It goes off the winch like a shot, and even in calm and air will achieve consistent glides. Airtronics plans for the Questor contain suggestions for the Commander R-O installation.

We've been asked whether we will have gift certificates this Christmas. Very definitely. If you are in doubt as to what to give your R/C modelling friend, (circle this and let this be in a conspicuous spot where your wife or it), will have gift certificates in any denomination from \$10.00 up. This will allow the recipient to make his own choice from our big and expanding catalog.

Next time we'll have more on the expansion of the Ace Digital Flite Paks. The changeover for the existing receiver-decoder is quite simple and is especially for the people who are using this with transmitters other than the Ace Digital 2 channel.

Digital Commanders are presently available all 27 and 53 mHz spots.

May you have happy flights and soft landings.



Yours sincerely,  
Paul F. Runge



# Join the pro's and use... AMBROID ADHESIVES



## Ambroid Regular Cement

The model builder's standby  
For all woods, leather, canvas  
metal, fabrics — waterproof, and  
hot fuel proof.

## Ambroid Extra Fast Dry Cement.

For on-the-spot repairs, it  
dries very quickly and is strong.



## Ambroid Se-Cur-It Resin Glue.

The super strength glue  
for all styrofoam, ceramics,  
cloth, paper and leather.  
hot fuel proof.

Available at your hobby dealer!

## AMBROID COMPANY

612 Montello Street  
Brockton, Massachusetts 02403

each side, to the torque tube and finish with resin to prevent warping of the stabilizer.

Round up a piece of 1/2" brass tube and another piece with lesser diameter which will rotate smoothly inside the 1/2" piece yet not flop around. Whenever a cut is made, polish the edges so the torque tube will rotate smoothly.

Note that the slot for the tube in the stabilizer blank is cut completely through the 1/2" balsa. Pin the tube to wax paper and, using a spatula, push epoxy into the gaps to hold the tube in position and make a flush surface.

The one-piece center torque tube is slipped through all three pieces of the completed stabilizer. *Do not* cut it into three pieces (as you did with the larger 1/2" piece). Slip this tube into the center section, and drill a 1/16" hole through both sides for the torque rod. (See diagrams on plans.) Then, insert the torque rod in the torque tube and solder at both ends. *Be careful* to do a neat job; the flux has a tendency to flow all over and gum up the tubes. The solder joints must be strong and closely contained in the vicinity of the joint. If solder or flux gets into the tube surfaces, the whole assembly must be taken apart and polished to make it work smoothly again.

The 1/32" spacers are made from scrap 1/2" brass tube. Be sure not to get any resin into the tubes or sheet metal screw holes when you resin the stabilizer halves. Do not finish the halves while they are fastened to the center section—finish them separately.

Glue the Nos. 2 and 4 bulkheads to the fuselage sides, then pull in the nose and tail ends. Add the triangulars, spacers, and bottom and top sheeting. Piece in the canopy area, and block in the engine compartment with one in, triangular pieces. (I usually install an old

engine with spinner to properly shape the front end and to be certain access room is left for the engine. Next, with rough sandpaper, rough out the shape of your plane. When that job is done, cut out the canopy hatch, wing hatch, wing cavity and stabilizer slot. Glue in the formers for the wing hatch and set aside. Position the wing on the fuselage, fiberglass the front hold-down dowels in place, and rig up the trailing edge bolt(s). Then glue the top wing hatch to the top of the wing, and sand it down to blend in with the rest of the fuselage. Install the center section of the flying stab with its access hatch cut out, and epoxy on the fin and fuselage spine.

For the fixed-gear version, use an old Debolt belly mount bolted to a piece of 3/16" plywood and lock it so it will not swivel. The retract-gear version requires more thought, and the Posittract nose gear units are recommended for both the front and belly gear. The nose unit is shown in phantom line on the plans—it retracts to the rear. The belly gear goes in the same position as the fixed gear with the same amount of sweep in the strut (it is necessary to adjust the micro-switching of the retract mechanism to obtain this sweep). The retractable belly gear is not shown on the plans. I am certain there is a better

## D.C. DART DIESEL ENGINES .036 cu.in.

\$12.95  
postpaid



Other D.C. diesels

in stock

Know the wind speed

For more  
information  
write:  
Dept. M



DWYER  
WIND METER  
\$6.50 Postpaid

HOBBY HIDEAWAY, Delavan, Ill. 61734



# You Just Put Your Hands On A Winner

Write for Free  
Brochure to:

RS Systems 2407 So. Broadway  
Santa Ana, Ca. 92705

# MORE NEW PLANES FROM CMI

## SPEEDSTER

Speedster 1/2A  
"Goodyear Racer"

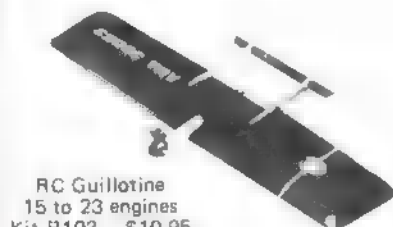
- ☆ Light and Flexible
- ☆ Fast Construction
- ☆ Full Size Plans
- ☆ Goodyear Racing Rules Included
- ☆ Designed by Dean Swift
- ☆ \$3.50



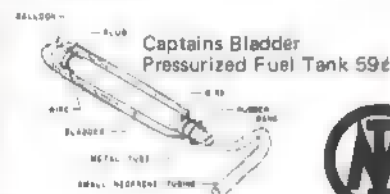
## OLD TIMER

Old Timer 1/2A  
"Stunt Plane"

- ☆ Designed by Dean Swift
- ☆ 18" wing span
- ☆ Excellent Stunt Trainer
- ☆ Full Size Plans
- ☆ Under Cambered Airfoil
- ☆ AMA Stunt Pattern included
- ☆ \$3.95



RC Guillotine  
15 to 23 engines  
Kit R103 - \$10.95  
(Kit only)



Captains Bladder  
Pressurized Fuel Tank 59¢



UC 1/4A Guillotine  
.049 to .09 engines  
Kit C102 - \$3.50  
(Kit only)



COMBAT V  
UC Guillotine  
for 35 engines  
\$6.50 (Kit only)

Winner of  
trophies at the  
Nats - Kit C101

The SST Kit C104 - \$3.50  
(Kit only)

This kit was featured in American Aircraft Modeler Tenderfoot series. This is a very stable easy to learn to fly plane. The kit includes tricycle landing gear for realistic take-offs and landings and Military decals.

Designed by Dean Swift



QUALITY

KITS

P.O. Box 79 Des Moines, Iowa 50301

## GET TOP PERFORMANCE!

USE  
**VIBRA-TAK**  
Slide Rule Tach.

Check the RPM's of your motor accurately. Instantly know what peak your motor is operating... get top efficiency and smooth running power. Engineer proven, VIBRA-TAK is a professional instrument built of polished, high stress aluminum. Carry it in your pocket or toolbox.

- CHECKS MOTOR SPEEDS
- INTERNAL COMBUSTION ENGINES
- ROTATING & VIBRATION EQUIP.
- GIVES DIRECT READINGS FROM 2000 TO 12000

Order from:  
**VERDELL INSTRUMENT SALES CO.**

P.O. BOX 212, EL CAJON, CALIF. 92020

## CANADIANS

Space Commander

now have the new G-45 I.C. system in stock. Complete unit with four I.C. servos and all nickel cad. batteries. Three month warranty fast service and spare parts on hand. Only \$75.00

Complete line of Solarfilm Colours in stock.

New from Complete-a-Pac. Fairy Swordfish kit 60" span engine to .60. Complete kit includes plans, hardware, fibreglass cowling, pre-bent only \$75.00

We also have the 62" Zero same as above

Plastic Fuselage formers for the CAP Hurricane 7.95

Canopy for the CAP Hurricane 3.00

Plans for the CAP Hurricane 6.95

Cowling (fibreglass) for the CAP Hurricane 6.95

Send \$1.00 for 1972 85 illustrated catalogue. This amount refunded on your first order over \$10.00.

Canadians only

CALGARY SUPPLY LTD.

Box 3173 5th. Calgary, Alberta.

118 Ave. N. W. Ph. 277-4684.

The model shop whose only business is Model Aircraft.



WEDELL - WILLIAMS

the national  
**AIR RACERS**  
in 3-VIEWS 1929-1949

\$3.95  
Postage Included

Views galore - all of the great classic Thompson, Bendix, Greve and Goodyear air racers are shown in magnificently detailed drawings. AND THERE'S MORE! Voluminous notes give the full story of each racer: pilots, race results, color schemes and markings, everything the race enthusiast, modeler, and historian could desire. The Golden Era is recreated on large, crisply printed 8 1/2 x 11 pages covering over 90 aircraft.

N.Y. State residents please add sales tax.

THE PUBLISHING COMPANY Dept. S  
P.O. Box 2726 Rochester, New York 14626



**MnM**  
RADIOMODELS

929 S CEDAR RD  
NEW LENOX, ILL. 60451

R/C PLANES - BOATS - CARS

P.O. BOX 111 - NEW LENOX, ILL.  
Phone: (815) 486-2898



R/C DISCOUNT CATALOG .50¢

**SPECIAL CUSTOM PROPS**

• highest quality maple

• perfectly balanced

• all popular 11" dia. sizes

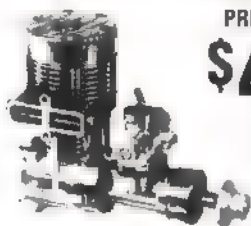
PRICE: \$3.00 each

MOST ORDERS SHIPPED U.P.S. THE DAY RECEIVED

## TAKE A LOOK AT FOX'S EAGLE 60

PRICED AT ONLY  
**\$49.95**

AMERICA'S  
FINEST



AS COMPARED TO **WEBRA 61**  
GERMANY'S FINEST AT \$89.95

The Webra 61 is a superb motor. The Fox Eagle is also a superb motor, but if it is to compete successfully, it must give more for less money — we think it does.

- **POWER** tilt slightly in favor of Eagle 60
- **FUEL DRAW** about even
- **WEIGHT** Eagle 60 weighs 1½ ounces less
- **VIBRATION** noticeably less on Eagle 60
- **THROTTLE RESPONSE** Eagle is definitely quicker

All this plus the fact that now for the first time you can get immediate delivery on Eagle 60

**FOX MFG. CO.**

5305 TOWSON AVE.  
FT. SMITH, ARK. 72901

method to retract it than the one I used (retracting towards the tail necessitated locating the throttle servo under the gas tank!). It would probably make more sense to retract the gear forward and take the sweep out of the strut. This, however, would decrease the cushioning effect and detract from the overall appearance of the gear. Use your own judgement.

Fiberglass both sides of the firewall (front and back) to provide a sturdy, vibration-resistant base for the engine. Also fiberglass any landing gear mounts — retractable or fixed.

If the Positrac system is used for the belly gear, remove the nose gear steering parts and tighten the side set screws to keep the strut from turning. Be sure to keep the nose-gear throw to a minimum since to maneuver little throw is needed.

The severe sweep in the hinge line complicates the making of the rudder horn. Round up a 4-40 bolt, 1½" long, and bolt it through the rudder near the hinge line. Thread an aileron tiller onto the bolt, and connect it to the pushrod Kwik Link.

The canopy is pieced together (or make it out of a solid block), cut from the fuselage, and painted. Cut an old clear canopy for the windscreen, and epoxy it in place.

It is probably unnecessary to tell experts how to set up a Pattern ship, but here are some notes on the landing gear system, CG, and control surface throws.

First, the landing gear. Much thought was put into this system. If you

change it, do not expect things to work perfectly. Less-than-perfect landings are nearly impossible if the outriggers and undercarriage are located according to the plan. For example, as the craft is set up on final, the power is reduced to full low and brought in fairly fast with a slight amount of back stick. This rocks the plane back on its heels causing the outriggers to touch ground first. These appendages are set up with a small amount of "spring" to put pressure on the nose gear when taxiing. When the weight is off the outriggers, they spring below the main gear and absorb most of the impact with the ground. As speed dies off, the belly gear comes into play and due to its sweep, further cushions the landing. By the time the nose gear comes into contact with the ground, it is set down so gently that a bounce is out of the question. The only thing to watch out for is the nose-gear throw. Because the belly gear is in direct line with the nose, very little throw is needed to redirect its path. Slop, therefore, must be kept out of the linkage at all costs.

Second, the flying stab has a few tricks to it. You will need about twice the throw you would expect: about 1/2" in both directions (sometimes as much as 5/8"). In the air the craft is not super-sensitive, but gives a smooth, gentle and precise feel which is just what today's pattern calls for. Also, a flying stab eliminates worrying about wing incidence. The stabilizer will always align itself with the wing to achieve level flight.

Last, but not least, is the CG. Due to the long nose moment, this craft cannot be tail-heavy. Even with all the flying stab equipment back there, I still had to add weight to the tail. Generally, the CG should be about 8¼ in. from the

# We're worth traveling for!

**NEW YORK**

**PA**

**NEW JERSEY**

**TINY TOTs**

OUR NEWEST STORE (OAKHURST, N.J.)

OPENING FALL 1972 (TOMS RIVER, N.J.)

Both stores open daily 11:30 - Sundays 10 to 5

# TINY TOTs

PLAY & RECREATION ITEMS FOR EVERYONE

## PLANS & THINGS

FOKKER P11

ILLUSTRATED CATALOGUE

W. W. GRAPH BOX A

INDENGO, CALIFORNIA 92024

## HOBBY CATALOGS

AIRPLANES	\$1.50
MILITARY	1.49
Ships (wood)	1.00
RAILROAD	1.75
CRAFTS	1.00
Raceway, Science	
• Rocketry	1.00

Dealer Inquiries Invited

314 FIFTH AVENUE  
N. Y., N. Y. 10001

2072 FRONT STREET  
E. MEADOW, L. I., N. Y.

197 Woodbridge Center  
Woodbridge, N. J.

512 MILBURN AVENUE  
MILBURN, N. J.

trailing edge of the wing, just outside the fuselage. From this point, gradually add tail weight until the plane enters easily into a spin. Once this is achieved, go no farther.

Don't try to fool yourself into thinking you can fly the Warlock if your skills are less than perfect. This is one heck of a lot of airplane, and it does not tolerate the slightest mistake. It has the capability of making a great pilot look magnificent with a minimum of practice, but I shudder to think of the result which will inevitably occur if inexperienced hands get on the box!

So, good luck. I hope I never have to compete against another Warlock!

## BLUE RIBBON REVIEW— PART II

(Continued from page 17)

mounting plate is then attached to the rotor head assembly with counter-sunk 4-40 machine screws. Three 8-32 machine screws hold the Wankel mounting ring to the plate. The engine is located on the plate with the throttle in line with the rotor blades. Final balancing of the rotor assembly is accomplished by placing small pieces of solder in the end of the rotor blade.

Several tanks of fuel were run through the engine before attempting tethered flight. With the chopper firmly anchored (bricks on the landing skid), this engine break in time also afforded an opportunity to check and observe the action of the controls. Final trim-

ming of the flybar linkage was made by observing the disc of the flybar in motion and adjusting for a level condition with all controls in neutral.

Initial flight attempts were made with the two-line tether system described in the instructions. The model weighed just under four lb. dry, and ten oz. of additional weight was attached to the landing gear. The first "flights" were made in Bob Beckman's backyard heliport, using a sheet of plywood as a landing pad. Two things became immediately obvious: There was enough lift from the Wankel; there wasn't enough tail rotor control. A quick trip to the shop to adjust the tail rotor linkage, and we were back to the now greasy plywood.

Several days and many penguin-type flights later we were beginning to wonder. The model obviously got light as power was applied, but it also started jittering and swinging around as soon as it started to lift. Even the most charitable of spectators couldn't say that the model was flying. At times it did seem that we had some control over the bird's gyrations, but for the most part it was just banging back and forth between tethers. We were beginning to question whether the engine had the power to turn the rotor fast enough to provide the necessary control.

At this point I got a break. Dave Gray was in town to help with the AMA demonstrations at TRANSPO '72, and he gave our bird a test flight. After removing the weights and checking over

## HOBBY HELPERS FULL SIZE PLANS

Group #465 1 set. 60 cents

Jimmie Motters's record-breaking Lockheed Vega—modeled as control line beauty by Walter Muscena. Span: 50"; length 30"; for .45 size or similar power.

Simplified control line autogiro—designed by Ole Den Nielsen. Rotor diameter 34"; length 37"; takes .45 to .65 size engine with motor control.

Group Plan #966 4 set. \$1.10

Lockheed Lightning P-38. Semi-scale stunt control-line model by Lew McFarland, uses twin .19's with throttle control for shooting landings.

Thorp Tiger. Famous home-built aircraft in radio control model form by Jim Krasser. Takes a .15 engine.

Group Plan #953C 1 set. 45¢

Focke-Wulf FW 190 German World War II control line flying scale fighter model by Walter Muscena. 3/4" to 1" scale, takes engine from .14 to .29 cu. in.

A-12 Viking Nordic Towline Glider by British Champ Bill Fairance. These are HALF-SIZE plans with full size ribs and cross sections.

Group Plan #166 4 set. \$1.10

"Interceptor Five" by Harold Dahl. Latest in famous designer's series of outstanding R/C Multi Class planes. Span: 67 1/2 inches; 60 inches long; uses .61 size engine.

For Special  
Handling  
of  
Plans only

8g per oz. 1st Class  
11g per oz. Air Mail  
United States and  
Possessions only

Latest  
Catalog  
send 15¢  
to  
cover  
handling

## HOBBY HELPERS

20 STILLWELL AVE. • BRONX, N.Y. 10461

FOR THE FINEST  
IN R/C FITTINGS  
USED THRUOUT  
THE WORLD  
LOOK TO  
**DU-BRO**

ASK FOR THEM AT ANY  
HOBBY SHOP OR MAIL ORDER  
**DU-BRO PRODUCTS**  
WAUCONDA, ILL. 60084 U.S.A.

### VINTAGE R-C PLANS



Smith Miniplane  
(MODIFIED)  
Wing Span 42 1-2"  
2 1-2" Scale Multi Plans \$4.50

KINNER FLEET 42" Span \$3.00  
MONOCOUE 90-A 55" " \$4.00

(OTHERS)  
FREE CATALOG  
DEALERS INQUIRIES INVITED

SID MORGAN

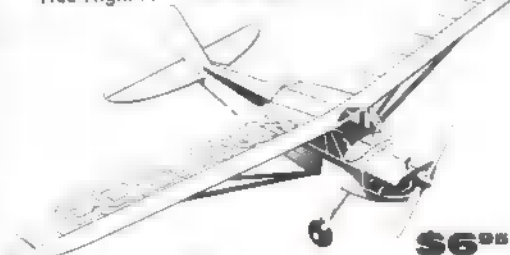
13157 Ormond, Belleville, Mich. 48111



Bill Dean's  
\$6.95 Kit #5-5  
**CESSNA "170"**

More than a dozen contest wins in its credit. A detailed scale replica of the prototype, easily built from a well detailed set of plans. Fly with or without R/C Plastic cowl, die-cut balsa and ply parts, selected strip, gear formed, celluloid; decal set, shaped, tapered wing edges.

Free-Flight . . . .020 to .045



\$6.95 Kit #5-6  
**PIPER  
SUPER CRUISER**

All the scale realism you could hope for. The look, the feel, the performance of the full scale "Super Cruiser". Fly it with or without radio. Highly detailed plans, attractive decal sheet, plastic cowl; formed gear. The balsa and ply parts are die-cut. Dowel; wire; covering.

**Jetco** RADIO  
MODELS SCALE AIRCRAFT

FREE-FLIGHT, RADIO CONTROL  
Radio Control . . . .045 to .074



16" Wingspan \$1.95 Kit #J-2  
**"CUTLASS"**  
For Jetex "50" Power . . . Catapult . . .



22" Wingspan \$1.95 Kit #J-3  
**"JET 50"**  
Fly it today. It assembles that fast!! High thrust prevents looping, die-cuts; clay ballast; hardwood fuselage. Flies

See your dealer today for more and other fine plans  
lots of all types. If no dealer is convenient, send us  
30¢ additional, and mail orders will be filled direct.

DESIGN

Jetco

C. H. TAYLOR CO. INC., BROOKLYN, NEW YORK 11221



Model aircraft fabrication/finishing products (Superior to Epoxy)



**FABRA-TEX CORP.**  
P.O. Box 310  
Waterville, Ohio 43566  
Phone (419) 878-5646



Extra durable primer/finish paint. Produces fast, light & strong finishes. Can be used as base coat under monokote or solarfilm.  
Quarts \$4.99 Pints \$3.49

## STRATO 210



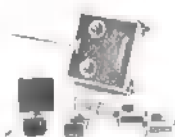
## the super stunter

A competition model that YOU can fly. A plane that will do the complete pattern, knife edge, spin, etc., and still maintain complete control. You can even fly-by on low motor INVERTED and still be able to waggle the wings and tail without dropping off!

**\$34.95**  
Dealer & Distributor  
inquiries invited

- 40 size engine
- 59" wingspan
- Fast assembly
- 572 sq. in. wing
- Balsa & Plywood
- Complete hardware
- Upright or inverted engine

### SILVERTONE MARK VII



The Mark VII Radio is handmade in small quantities to fill the needs of those flyers whose re-

quirements go beyond the normal production line equipment. Over 75% of all Australian R/C Records have been set by flyers using Silvertone Radio 4-5-6 Channel equipment available. Prices start at \$419.00.

### FAIL SAFE!

CONVERTS ANY PULSE SERVO TO FAILSAFE. JUST INSERT BETWEEN SERVO AND PLUG—NO EQUIPMENT MODIFICATION NECESSARY. FAILSAFE RETURNS SERVO TO END EVENT OF RADIO FAILURE.

**\$24.95**



THIS CAN BE USED TO SHUT DOWN THE THROTTLE OR TO THROW FULL RUDDER.



### STRATO MODEL PRODUCTS

(Division of Warehouse Systems)

Rt. 8, Scranton/Carbondale Highway, Olyphant, Pa. (717) 838-1111

the engine installation, Dave was ready to go. As he didn't feel that Bob's backyard heliport was big enough, we all trooped out into the street in front of the house. The tank was filled, the engine started, and Dave took the bird up. Just like that!

All doubts about the capability of the model were removed. Our difficulty had really been the capability of the pilot. Dave made several flights that evening (we wound up under the street light at the corner) with both the Wankel-powered version and one of his own 40-powered birds. We reached the conclusions that: 1) the Wankel will fly the Whirlybird nicely when it is putting out peak power, but none of the margin of power is available that is so important to helicopter flying; 2) the marginal power situation further complicates the already difficult task of learning to fly a new way. That the power is marginal is not surprising, since the Wankel is a nominal 30. What is pleasantly surprising is that this rotary piston engine produces enough power to fly the Whirlybird smoothly, *once you know what you're doing.*

Dave had another valuable hint regarding the landing gear. Up to this point we had been using the skid gear that came with the kit. This is quite adequate and looks very scale-like, but as Dave pointed out, its narrow tread is what allows the chopper to jitter and bounce around just before it becomes airborne. One of Dave's models was fitted with wide stance, tricycle, training gear. The advantages are: 1) as the throttle is advanced, the model remains stable until adequate control forces have been developed by the main and tail rotors; 2) the wide stance of the gear will help to avoid tipping over and breaking rotor blades; 3) the tether system is not needed. Once the pilot's capability has been developed, the skid-type gear can be used.

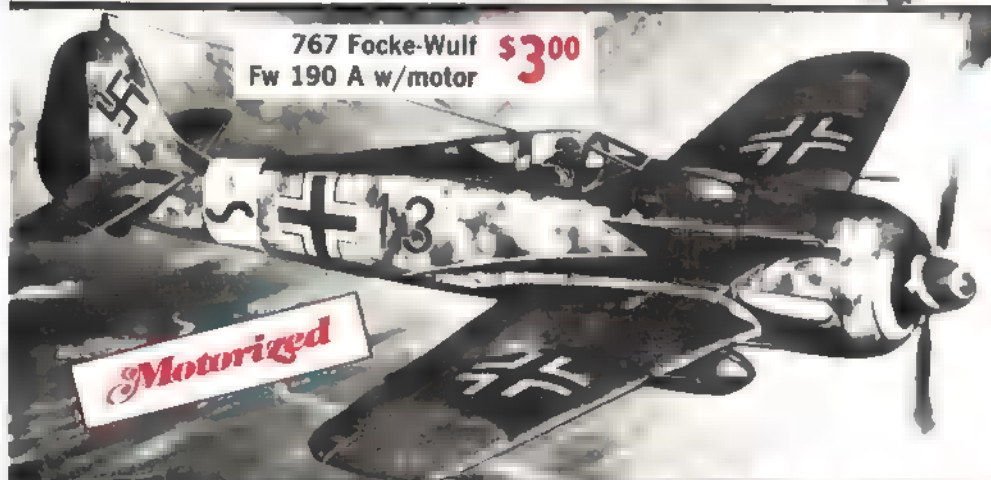
Several versions of the training gear have been made, and the final version is shown in the drawings. Construction is simple, but a few words on evolution are in order. The first gear made was fabricated from 1/4" dowels with rubber balls on the ends. Looked great, but the rubber balls wouldn't slide so it was hard to move the model around, the dowels were both springy and weak so on a hard landing they either broke or bounced the model over and banged up the rotor. Ping-pong balls were tried in place of the rubber balls, but they were too fragile. Small rubber-tired wheels looked good for a while, but going sideways they would dig in and flip the bird just like the original balls. The final combination of fiberglass rods and plastic practice golf balls seems ideal.

By this time we really had the bit in our teeth on this business of helicopter flying and we wanted to master it. The Wankel was temporarily retired, and we looked around for something with enough power to make our tyro attempts a little easier. The Ross twin looked like the answer. Here we had a setup where the counter-balance has a piston in it to contribute to the power available. Mounting the Ross was simply

785 Messerschmitt  
Me 109G **\$3<sup>00</sup>**



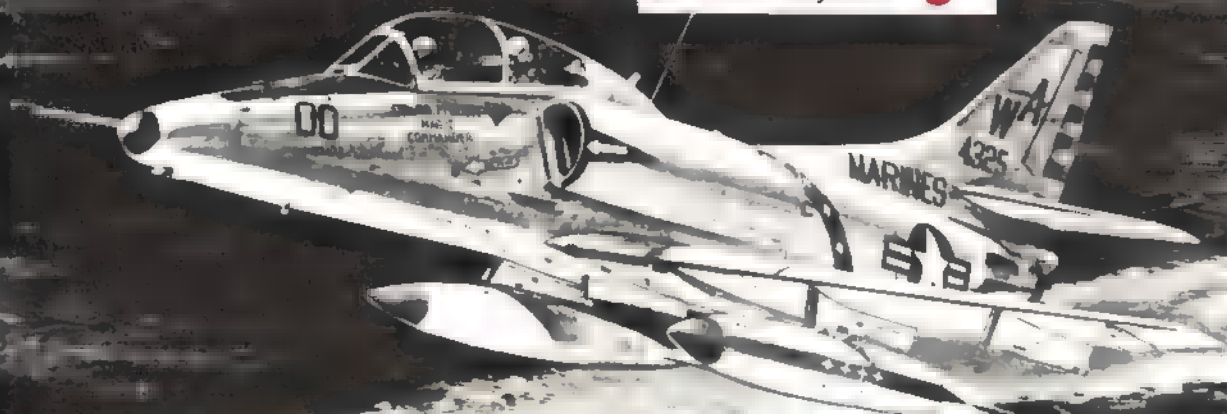
767 Focke-Wulf **\$3<sup>00</sup>**  
Fw 190 A w/motor



## **NEW!** SCALE MODEL EXCITEMENT

Get ready for take-off with one of the most action-packed models. They're built to exact 1/48 scale with authentic markings that echo the real thing. All three are ready for duty now, as outstanding new additions to your private

784 TA-4F Skyhawk **\$3<sup>00</sup>**



# **BACHMANN**

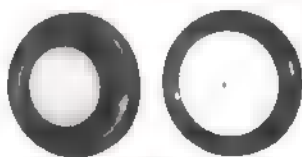
Quality since 1833  
PHILADELPHIA, PENNSYLVANIA 19124



## SMALL FLYING MODEL AIRCRAFT ACCESSORIES



PROPS RUBBER AND CO<sub>2</sub>



SMOOTH CONTOUR & VINTAGE WHEELS (MANY SIZES)



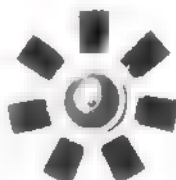
NOSE BEARINGS (3 SCALES)



PROP HANGERS



DUMMY CYLINDERS (3 SCALES)



UNIVERSAL BASIC ENGINE KITS AVAILABLE IN FIVE, SEVEN, NINE CYLINDER TYPES, AND DIFFERENT SCALES. LARGE COMPLETE ENGINE KITS ALSO AVAILABLE.



ASK FOR WILLIAMS BROS. PRODUCTS AT YOUR DEALER  
SEND 25c FOR OUR MODEL ACCESSORIES CATALOG DEPT. A.M.  
181 "B" STREET, SAN MARCOS, CALIFORNIA 92069

## IN CANADA

### ACADEMY PRODUCTS



## EVERYTHING FOR THE MODELER

Canadian Modelers: Canadian Dealer  
Write for an Inquiries  
ACADEMY CATALOGUE. Invited.  
75 cents, Postage free. Wholesale only.

### ACADEMY PRODUCTS LIMITED

51 Millwick Drive, Weston, Ont., Canada.



BOX 24263 - Indianapolis, Ind. 46226  
SCALE PLASTIC & Balsa MODEL AIRPLANE KITS  
Frog - Airlife - Mustang - Gull - Kayak  
Cleveland Kitty - Plans & Printwood  
ACCESSORIES & MODELERS SUPPLIES  
Lustrous Decals  
Micro Scale Decals  
MANY SPECIAL OFFERS  
Send 25c for new page catalog #MA 2A

**100 RC WINGS**

714-741-1111  
Wings are for sale in 100's of 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128, 1/256, 1/512, 1/1024, 1/2048, 1/4096, 1/8192, 1/16384, 1/32768, 1/65536, 1/131072, 1/262144, 1/524288, 1/1048576, 1/2097152, 1/4194304, 1/8388608, 1/16777216, 1/33554432, 1/67108864, 1/134217728, 1/268435456, 1/536870912, 1/1073741824, 1/2147483648, 1/4294967296, 1/8589934592, 1/17179869184, 1/34359738368, 1/68719476736, 1/137438953472, 1/274877906944, 1/549755813888, 1/1099511627776, 1/2199023255552, 1/4398046511104, 1/8796093022208, 1/17592186044416, 1/35184372088832, 1/70368744177664, 1/140737488355328, 1/281474976710656, 1/562949953421312, 1/1125899906842624, 1/2251799813685248, 1/4503599627370496, 1/9007199254740992, 1/18014398509481984, 1/36028797018963968, 1/72057594037927936, 1/144115188075855872, 1/288230376151711744, 1/576460752303423488, 1/1152921504606846976, 1/2305843009213693952, 1/4611686018427387904, 1/9223372036854775808, 1/18446744073709551616, 1/36893488147419103232, 1/73786976294838206464, 1/1475739525896764128, 1/2951479051793528256, 1/5902958103587056512, 1/11805916207174113024, 1/23611832414348226048, 1/47223664828696452096, 1/94447329657392904192, 1/188894659314785808384, 1/377789318629571616768, 1/755578637259143233536, 1/1511157274518286467072, 1/3022314549036572934144, 1/6044629098073145868288, 1/12089258196146291736576, 1/24178516392292583473152, 1/48357032784585166946304, 1/96714065569170333892608, 1/193428131138340667785216, 1/386856262276681335570432, 1/773712524553362671140864, 1/1547425049106725342281728, 1/3094850098213450684563456, 1/6189700196426901369126912, 1/12379400392853802738253824, 1/24758800785707605476507648, 1/49517601571415210953015296, 1/99035203142830421906030592, 1/198070406285660843812061184, 1/396140812571321687624122368, 1/792281625142643375248244736, 1/1584563250285286750496489472, 1/3169126500570573500992978944, 1/6338253001141147001985957888, 1/12676506002282294003971915776, 1/25353012004564588007943831552, 1/50706024009129176015887663104, 1/101412048018258352031775326208, 1/202824096036516704063550652416, 1/405648192073033408127101304832, 1/811296384146066816254202609664, 1/1622592768292133632508405219328, 1/3245185536584267265016810438656, 1/6490371073168534530033620877312, 1/12980742146337069060067241754624, 1/25961484292674138120134483509248, 1/51922968585348276240268967018496, 1/103845937170696552480537934036992, 1/207691874341393104961075868073984, 1/415383748682786209922151736147968, 1/830767497365572419844303472295936, 1/1661534994731144839688606944591872, 1/3323069989462289679377213889183744, 1/6646139978924579358754427778367488, 1/13292279957849158717508855556734976, 1/26584559915698317435017711113469952, 1/53169119831396634870035422226939904, 1/106338239662793269740070844453879808, 1/212676479325586539480141688907759616, 1/425352958651173078960283377815519232, 1/850705917302346157920566755631038464, 1/1701411834604692315841133511262076928, 1/3402823669209384631682267022524153856, 1/6805647338418769263364534045048307712, 1/13611294676837538526729068090096615424, 1/27222589353675077053458136180193230848, 1/54445178707350154106916272360386461696, 1/108890357414700308213832544720772923392, 1/217780714829400616427665089441545846784, 1/435561429658801232855330178883091693568, 1/871122859317602465710660357766183387136, 1/1742245718635204931421320715532366774272, 1/3484491437270409862842641431064733548544, 1/6968982874540819725685282862129467097088, 1/13937965749081639451370565724258934194176, 1/27875931498163278902741131448517868388352, 1/55751862996326557805482262897035736776704, 1/111503725992653115610964525794071473553408, 1/223007451985306231221929051588142947106816, 1/446014903970612462443858103176285894213632, 1/892029807941224924887716206352571788427264, 1/1784059615882449849775432412705143576854528, 1/3568119231764899699550864825410287153709056, 1/7136238463529799399101729650820574307418112, 1/14272476927059598798203459301641148614836224, 1/28544953854119197596406918603282297229672448, 1/57089907708238395192813837206564594459344896, 1/114179815416476790385627674413129188918689792, 1/228359630832953580771255348826258377837379584, 1/456719261665907161542510697652516755674759168, 1/913438523331814323085021395305033511349518336, 1/1826877046663628646170042790610067022699036672, 1/3653754093327257292340085581220134045398073344, 1/7307508186654514584680171162440268090796146688, 1/14615016373309029169360342324880536181592293376, 1/29230032746618058338720684649761072363184586752, 1/58460065493236116677441369299522144726369173504, 1/116920130986472233354882738599044289452738347008, 1/233840261972944466709765477198088578905476694016, 1/467680523945888933419530954396177157810953388032, 1/935361047891777866839061908792354315621906776064, 1/1870722095783555733678123817584708631243813552128, 1/3741444191567111467356247635169417262487627104256, 1/7482888383134222934712495270338834524975254208512, 1/14965776766268445869424990540677669049950508417024, 1/29931553532536891738849981081355338099901016834048, 1/59863107065073783477699962162710676199802033668096, 1/119726214130147566955399924325421352399604067336192, 1/239452428260295133910799848650842704799208134672384, 1/478904856520590267821599697301685409598416269344768, 1/957809713041180535643199394603370819196832538689536, 1/1915619426082361071286398789206741638393665077379072, 1/3831238852164722142572797578413483276787330154758144, 1/7662477704329444285145595156826966553574660309516288, 1/15324955408658888570291190313653933107149320619032576, 1/30649910817317777140582380627307866214298641238065152, 1/61299821634635554281164761254615732428597282476130304, 1/122599643269271108562329522509231464857194564952260608, 1/245199286538542217124659045018462929714389129904521216, 1/490398573077084434249318090036925859428778259809042432, 1/980797146154168868498636180073851718857556519618084864, 1/1961594292308337736997272360147703437715113039236169728, 1/3923188584616675473994544720295406875430226078472339456, 1/7846377169233350947989089440590813750860452156944678912, 1/15692754338466701895978178881181627501720904313889357824, 1/31385508676933403791956357762363255003441808627778715648, 1/62771017353866807583912715524726510006883617255557431296, 1/125542034707733615167825431049453020013767234511114862592, 1/251084069415467230335650862098906040027534469022229725184, 1/502168138830934460671301724197812080055068938044459450368, 1/1004336277661868921342603448395624160110137876088918900736, 1/2008672555323737842685206896791248320220275752177837801472, 1/4017345110647475685370413793582496640440551504355675602944, 1/8034690221294951370740827587164993280881103008711351205888, 1/16069380442589902741481655174329986561762206017422702411776, 1/32138760885179805482963310348659973123524412034845404823552, 1/64277521770359610965926620697319946247048824069690809647104, 1/128555043540719221931853241394639892494097648139381619294208, 1/257110087081438443863706482789279784988195296278763238588416, 1/514220174162876887727412965578559569976390592557526477176832, 1/1028440348325753775454825931157119139952781185115052954353664, 1/2056880696651507550909651862314238279905562370230105908707328, 1/4113761393303015101819303724628476559811124740460211817414656, 1/8227522786606030203638607449256953119622249480920423634829312, 1/16455045573212060407277214898513906239244498961840847269658624, 1/32910091146424120814554429797027812478488997923681694539317248, 1/65820182292848241629108859594055624956977995847363389078634496, 1/131640364585696483258217719188111249913955991694726778157268992, 1/263280729171392966516435438376222499827911983389453556314537984, 1/526561458342785933032870876752444999655823966778907112629075968, 1/1053122916685571866065741753504889999311647933557814225258151936, 1/2106245833371143732131483507009779998623295867115628450516303872, 1/4212491666742287464262967014019559997246591734231256901032607744, 1/8424983333484574928525934028039119994493183468462513802065215488, 1/16849966668969149857051868056078239988986366936925027604130430976, 1/33699933337938299714103736112156479977972733873850055208260861952, 1/67399866675876599428207472224312959955945467747700110416521723904, 1/134799733351753198856414944448625919911890935495400220833043447808, 1/269599466703506397712829888897251839823781870990800441666086895616, 1/539198933407012795425659777794503679647563741981600883332173791232, 1/1078397866814025590851319555589007359295127483963201766664347582464, 1/2156795733628051181702639111178014718590254967926403533328695164928, 1/4313591467256102363405278222356029437180509935852807066657390329856, 1/8627182934512204726810556444712058874361019871705614133314780659712, 1/17254365869024409453621112889424117748722039743411228266629561319424, 1/34508731738048818907242225778848235497444079486822456533259122638848, 1/69017463476097637814484451557696470994888158973644913066518245277696, 1/138034926952195275628968903115392941989776317947289826133036490555392, 1/276069853904390551257937806230785883979552635894579652266072981110784, 1/552139707808781102515875612461571767959105271789159304532145962221568, 1/1104279415617562205031751224923143535918210543578318609064291924443136, 1/2208558831235124410063502449846287071836421087156637218128583848886272, 1/4417117662470248820127004899692574143672842174313274436257167697772544, 1/8834235324940497640254009799385148287345684348626548872514335395545088, 1/17668470649880995280508019598770296574691368697253097745028670791090176, 1/35336941299761990561016039197540593149382737394506195490057341582180352, 1/70673882599523981122032078395081186298765474789012390980114683164360704, 1/141347765199047962244064156790162372597530949578024781960229366328721408, 1/282695530398095924488128313580324745195061899156049563920458732657442816, 1/565391060796191848976256627160649490390123798312099127840917465314885632, 1/1130782121592383697952513254321298980780247596624198255681834930629771264, 1/2261564243184767395905026508642597961560495193248396511363669861259542528, 1/4523128486369534791810053017285195923120990386496793022727339722519085056, 1/9046256972739069583620106034570391846241980772993586045454679445038170112, 1/18092513945478139167240212069140783692483961545987172090909358890076340224, 1/36185027890956278334480424138281567384967923091974344181818717780152680448, 1/72370055781912556668960848276563134769935846183948688363637435560305360896, 1/144740111563825113337921696553126269539871692367897376727274871120610721792, 1/289480223127650226675843393106252539079743384735794753454549742241221443584, 1/578960446255300453351686786212505078159486769471589506909099484482442887168, 1/1157920892510600906703373572425010156318973538943179013818198968964885774336, 1/2315841785021201813406747144850020312637947077886358027636397937929771548672, 1/4631683570042403626813494289700040625275894155772716055272795875859543097344, 1/9263367140084807253626988579400081250551788311545432110545591751719086194688, 1/1852673428016961450725397715880016250110357662309086422

# Art Schell's SUPER CHIPMUNK

IS HERE! THE PLANE THAT THRILLED MILLIONS—  
A.R.F. INJECTION MOLDED FOAM — FANTASTICALLY AEROBATIC

...brush up in Flyology with the "professor  
of Stunt pilots" Airplane

Pilot not incl.



FULL HOUSE OR  
SINGLE CHANNEL  
ENGINE 10-19  
WINGSPAN 46"

RETRACTS OPT.

no. 126

\$ 24.95

With a helicopter, four gallons are used surprisingly fast.

Comments by other would-be Du-Bro 505 pilots indicate much misunderstanding of helicopter characteristics. For example, the Du-Bro is not top-heavy just because the engine is on top. Consider where the lift is coming from and realize that all the weight is below the lift. The chopper may seem top-heavy because of marginal control and

stability when the rotors slow down or are unpowered when chopping the throttle. Because this model has a low rotor speed, that speed is critical.

Helicopters when within one rotor diameter distance from the ground are flying in a very slippery bubble of air. All control inputs are concentrated on keeping on top of that bubble. When the model is up to five ft., it is riding on a more stable column of air, not just a

IT'S HERE!

Pro  
Custom Hobbies

742 Frederick Road  
Catonsville, Maryland

A HOBBY SHOP THAT CARES

## VARI-GLOW

Model Engine Glow Plug Regulator

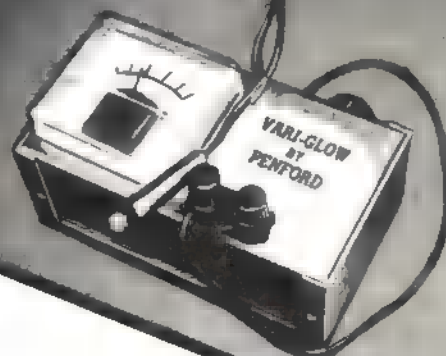
Voltage may be varied from 0-4V

Indicates blown plugs, flooded engine

Clear flooded engines simply by increasing voltage to plug.

Use any 2V-5V power supply.

Ideal for use with electric starters by tapping battery for 2-4V. May be used with all glow plugs.



\$24.95

PENFORD PLASTICS CORP.

320 Curtis Ohio

**PARALLEL**  
**EXCUSE US IF WE STRUT A BIT!**

Made of high-tensile strength extruded aluminum

**PARALLEL STRUT** \$295 ea.  
Complete with:  
2 Nylon Bearings  
4 Screws  
& T Nuts

1 1/4" Depth  
1 1/2" Depth  
1 3/4" Depth  
2" Depth  
3" Depth

7/8" Boss  
1 1/2" Boss

Shaft: steel 3/16" DIA. PROPELLER SHAFT & DRIVE DOG COMBINATION  
3 1/4" long  
Drive Dog: Hardened, plated steel supplied with 8-32 cup point set screw

1 1/4" Bore  
1 1/2" long  
**BALL THRUST BEARING**  
1 1/4" O.D. \$1.80  
1 1/2" O.D. 2.50

**LOWER UNIVERSAL JOINT** \$235 set  
Hardened, plated steel.  
Use with Parallel Strut  
1 1/4" to 1 1/2" shaft—OC613 F & M  
1 1/2" to 1 3/4" shaft—OC519 F & M

**STREAMLINED TAIL NUT** plated  
1 1/4" long, 10-32 thread, 75c ea.  
OC6PN—1 1/4"  
OC6PNM—1 1/2"

**OCTURA MODELS**  
If dealer cannot supply you—order direct—add 10% for postage and handling—Illinois customers include Sales Tax.  
8748 W.D. MILWAUKEE AVE. • NILES, ILLINOIS 60649



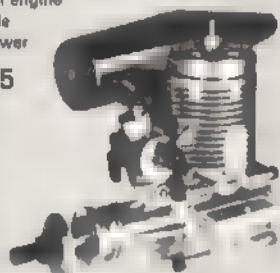
## 72 Series Hirtenberger Engines

The most powerful muffler equipped R/C engines in the world!

### HP40F-RC

Ideal pattern engine  
Excellent idle  
.80 horsepower

**\$56.95**  
(with muffler)



### HP40R-PR

Perfect for RC pylon  
Dependable power  
1.2 horsepower

**\$59.95**  
(with RC mixture venturi)



### HP61FR-RC

Pattern and scale leader  
Brute power  
1.3 horsepower

**\$84.95**  
(with muffler)



### HP61RR-RC

Open pylon and marine use  
All new disk rotary valve  
1.52 horsepower

**\$92.95**  
(Marine version \$102.95)



### HP61RR-RC THE NEW DESIGN

Muffler as part of integral design  
World Championship performance with handling qualities so gentle they are ideal for sport flying  
Schnurle ported for competition power  
Lowest vibration of any high powered 61  
Coolest running of any 61 engine  
Old World craftsmanship and care throughout

ALL HP PARTS CARRIED IN STOCK—IMPORTED



**NELSON MODEL PRODUCTS**

6929 WEST 59TH STREET • CHICAGO, ILLINOIS 60638 • (312) 586-7101

bubble. Also, the Du-Bro is a rigid rotor design and must be in full free flight off the ground (by at least an inch) before any control inputs are meaningful. Inputs on the ground have no relation to the direction of flight or movement of the model. So, bring the rotors up to speed, then lift off quickly but slightly before expecting controls to take effect.

As mentioned by Bob Beckman in the above text, we switched from the Wankel engine to the Ross to try the model with additional power. I made this conversion after achieving significant power increases. Unfortunately, Bob did not get to fly it with the improved Wankel operation.

The engine loves lots of nitro and K&B 500 seems to be its best fuel. A Fox short idle-bar plug improves rpm by nearly 800 rpm over the original O.S. Wankel plug. The engine overheats and then sags fairly soon after running up to full speed on the helicopter, as there is almost no cooling in this application. Simple aluminum cooling fan of eight blades, 4 1/2 in. dia. mounted just under the flying prop, provides the necessary engine cooling air. Use an 11-4 prop to fly the helicopter.

You just can't beat having extra power and the Ross is the way to overpower the Du-Bro 505. However, by using a high pitch prop (11-7 1/2), more energy is put into the main rotor via torque at liftoff speed. More torque means more rotor rpm and thus both more control and more stability.

The tripod landing gear is quite easy to make either with fiberglass rods into a base block or with bent wires into the original landing gear mounts. We'll sketch the elaborate tripod gear, you can simplify it to suit yourself. Please, build one for your model, it makes learning to fly more successful and possible.

**Hire the handicapped.**

**PAS**

PUBLIC ADVERTISING SYSTEM  
A DIVISION OF THE SCHOOL OF VISUAL ARTS



**BUILDERS — COLLECTORS  
BUY - SELL - TRADE**

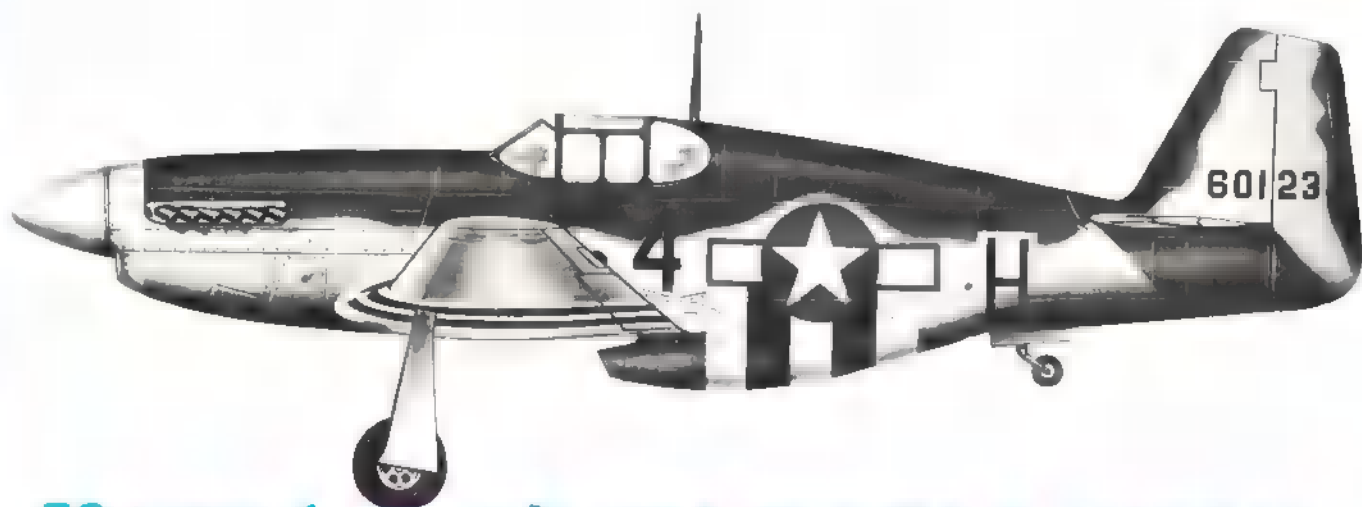
Did you know that there is a nationally advertised monthly publication designed just for you? A publication that deals in individual ads to buy, sell or trade model kits, railroad items, books, magazines, military items, etc.

Available in your local hobby shop or from the publisher — 35¢ per issue — subscription \$3.50 a year. Ad rates \$1.00 for 50 words or less. (One free ad with subscription)

**The Collectors Journal**

1225 Saxon Ave., Dept. MN  
Bay Shore, New York 11706

DEALER INQUIRIES INVITED



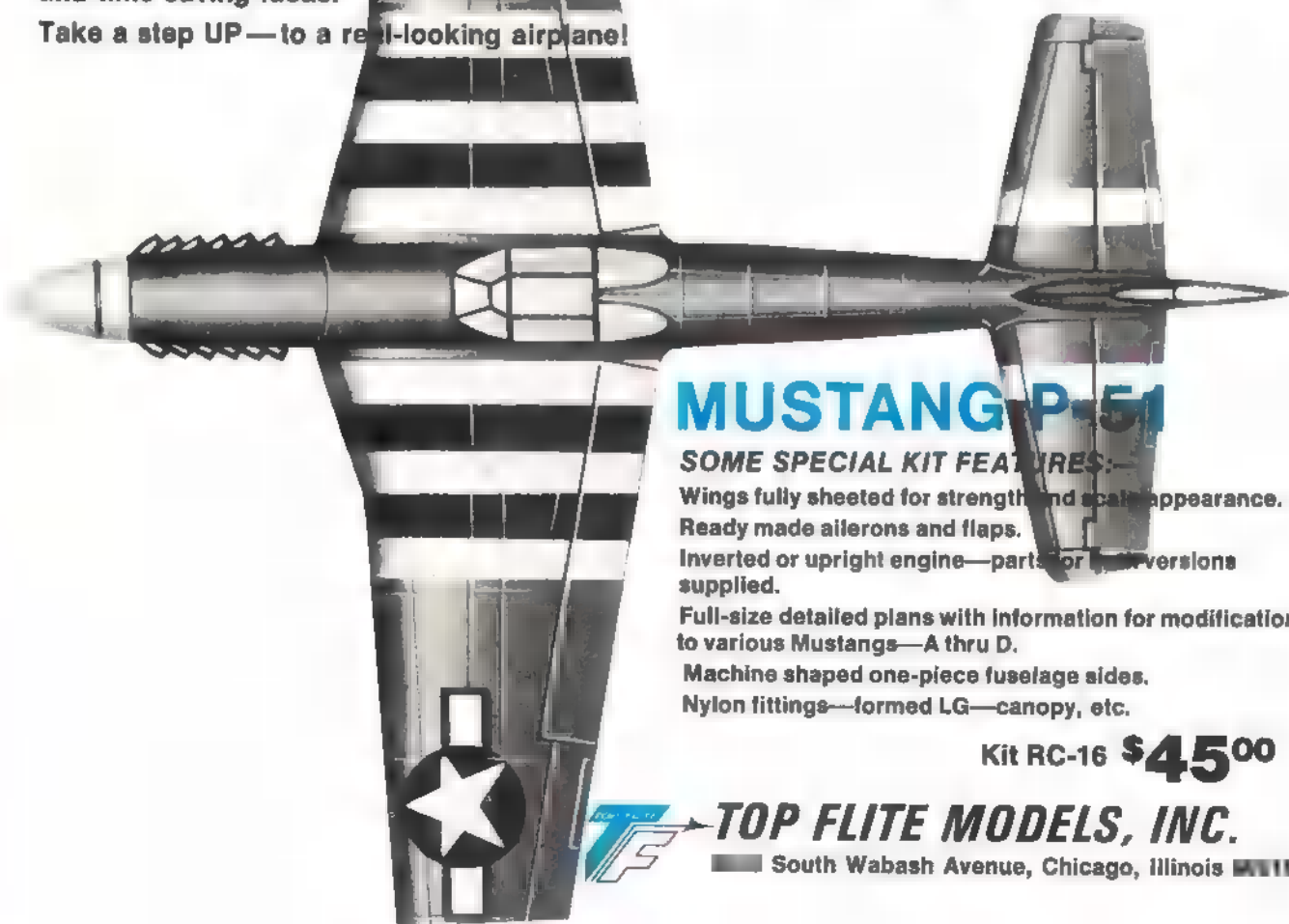
## If you haven't yet made a scale model, there's no excuse—Now!

Our new Radio Controlled P-51 Mustang is a *Standoff Scale* model. You can build it in about the ~~same~~ time a Kwik-Fli takes, but when you're through, you've got a model that only a ruler can tell from a true scale plane.

This means that in the same building time of your next sport or pattern R/C, you could have instead *this Mustang* . . . an authentic looking plane that flies like a sport model — no tricky handling.

Designed by Scale Champ Dave Platt, wing span is 60" for .40 to .60 engines and full house R/C. The flaps can be stationary or operable. And like all Top Flite kits, it has exciting new features and time saving ideas.

Take a step UP—to a real-looking airplane!



### MUSTANG P-51

#### SOME SPECIAL KIT FEATURES:

Wings fully sheeted for strength and scale appearance.

Ready made ailerons and flaps.

Inverted or upright engine—parts for both versions supplied.

Full-size detailed plans with information for modification to various Mustangs—A thru D.

Machine shaped one-piece fuselage sides.

Nylon fittings—formed LG—canopy, etc.

Kit RC-16 **\$45<sup>00</sup>**

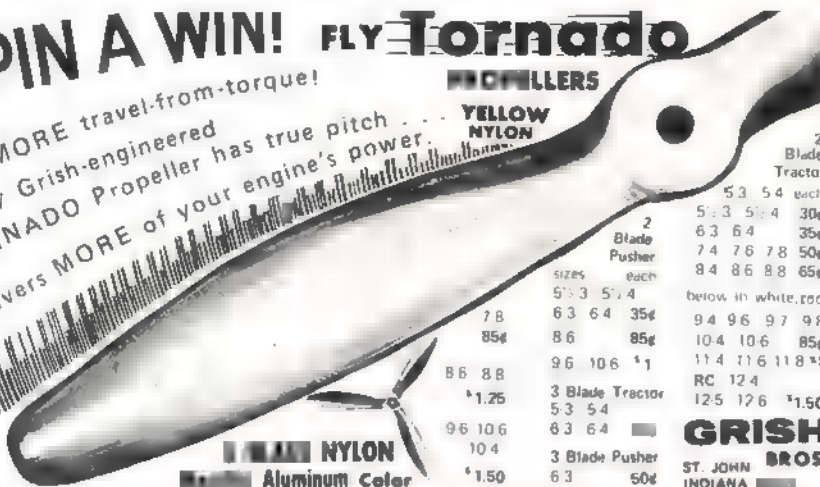


**TOP FLITE MODELS, INC.**

South Wabash Avenue, Chicago, Illinois 60601

# SPIN A WIN! FLY Tornado

Get MORE travel-from-torque!  
Every Grish-engineered  
TORNADO Propeller has true pitch  
delivers MORE of your engine's power.



## "FULL HOUSE PLUS THREE"



Great New Single or Dual Stick Designs

Eight independent channels in a package no bigger than conventional full-house transmitters. Choose either single or dual-stick control in 27, 53 and 72 MHz operation — with adjacent frequencies — no extra cost. Both transmitters have a two-position switch for landing gear, finger adjust tabs for auxiliary channels; trainer link jacks and "buddy button"; external charging jack for simultaneous charging of transmitter and receiver batteries; eight range controls for adjusting servo travel. You order your Heathkit Eight-Channel System with any combination of four GDA-405-4 Miniature Servos or GDA-505-4 Sub-Miniature Servos. With receiver, battery pack and four Miniature Servos, airborne weight is 13.3 oz. Substituting four Sub-Miniatures, shown in illustration, brings the weight down to 11.3 oz. If you want eight-channel flexibility, the GD-405 systems, at build-it-yourself Heathkit prices, are the only way to fly.

- Kit GDA-405-S, Single Stick Transmitter only, 4 lbs. .... \$139.95\*
- Kit GDA-405-D, Dual Stick Transmitter only, 5 lbs. .... \$119.95\*
- Kit GDA-405-2, 8-Channel Receiver only, 1 lb. .... 54.95\*
- Kit GDA-405-3, Receiver Battery Pack only, 1 lb. .... 9.95\*
- Kit GDA-405-4, one Miniature Servo only, 1 lb. .... 24.95\*
- Kit GDA-505-4, one Sub-Miniature Servo only, 1 lb. .... 24.95\*

**SAVE ■ ■ SINGLE STICK SYSTEM:** consisting of transmitter, receiver, battery pack and any four servos. Batteries included. List model numbers separately.  
Special System Price ..... 269.95\*

**SAVE ON A DUAL STICK SYSTEM:** consisting of transmitter, receiver, battery pack and any four servos. Batteries included. List model numbers separately.  
Special System Price ..... 249.95\*



The Heathkit Catalog has over 350 fun to build kits. Order yours today

HEATH COMPANY, Dept. 80-11  
Benton Harbor, Michigan 49022

☐ Please FREE Heathkit Catalog.

☐ Enclosed \$ \_\_\_\_\_, plus shipping.

Please send model(s) \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Prices & specifications subject to change without notice.

\*Mail order prices; F.O.B. factory.

GX-261

## CONTROL LINE

(Continued from page 35)

different and want to get some color back into your local Carrier contest, you might investigate the use of these planes.

Jim Finley (Wichita, Kansas), as a result of his win in the Open Class, was the most happy individual I have seen in a long time. Jim has been trying for years to capture the Open crown, but for one reason or another it has eluded him until now. Jim was the third or fourth contestant to get airborne in this competition and put his Guardian through its paces to post an impressive 588.19 score. As it turned out, the score held throughout the day giving Jim the Open win. Jim's Guardian was equipped with a Possi 60, Bill Johnson fuel metering system and used a Herron blend fuel.

Robert Sawicki (Wyandotte, Mich.), eleven years old, also put on a great show at the Carrier circles by taking first place in the Junior classes for I and II events. Robert posted a 507.78 in Class II, but exceeded this score in Class I to establish a new Class I record at 515.15 points. Robert's win this year makes it the fourth consecutive year that he has dominated the Junior Carrier Class I and II events.

Terry Herron (Wichita, Kansas) flew his Japanese Judy to a first place win in Class I with a 518.05. I might point out that by winning this year, Terry has successfully defended his Senior crown won in 1971.

In the Open classes the names of Ray Willman (Normandy, Mo.) and Dick Sawicki (Westland, Mich.) are like household names. Both men can be counted upon to be in the winners' circle at the Nats—it's only a matter of which place. Last year in the Class I event Sawicki took the first place slot while Willman placed second. Approximately seven points separated them in 1971. This year, however, Willman took the first place slot flying his Guardian for a 556.10 score to beat Sawicki who finished in the second place slot with his French Latecoere, less than three points behind Willman. What will it be next year, gentlemen?

To round out the report on Carrier event winners it should be noted that Senior John Gerber (Wyomissing, Pa.), flying a Martin MO-1, took the Senior Class II event with a 499.24 score.

Control Line Scale was not as impressive this year as it has been in the past couple of years. I believe this was because our top-notch scale modelers were in France representing the U.S.A. at the World Championships, and many new faces were seen at the Scale circles. This probably accounted for a lower level of workmanship and fewer operational features than is normally seen in this event, all of which was evident in the scoring. The highest score was 460 points in the Open Class where there are usually several scores over the 500 mark.

Seniors Cathy Burnstine and Rick Ouweleen had the only multi-engine planes entered. Cathy ran into trouble

**CANNON**  
ELECTRONICS13400-26 Satcoy Street  
North Hollywood, Calif. 91605  
(213) 764-1488

WRITE FOR COMPLETE BROCHURE

**PROPORTIONAL  
CONTROL EQUIPMENT**

ALL NEW FOR '72

ALL NEW FOR '72

ALL NEW FOR '72

**CANNON EXECUTIVE IV  
R/C SYSTEM****NOW BETTER THAN EVER !****NEW PLUGS**THE SYSTEM THAT INCORPORATES  
ALL THE LATEST TECHNOLOGY  
AVAILABLE TO THE INDUSTRY:

- 3-WIRE SERVOS
- I.C. CHIP SERVO AMPLIFIER
- 2-WIRE BATTERY PACK
- NICAD BATTERIES
- I.C. CHIP RECEIVER DECODER
- SUPERHET CIRCUITRY
- SEPARATE SAFETY CHARGER

**MORE SENSITIVE RECEIVER****ALL R/C FREQUENCIES**COMPLETE SYSTEM, READY  
TO PLUG IN AND OPERATE,  
WITH 4 SERVOS:**\* \$239.95**

27 MHZ

ADD \$10.00 FOR  
53 ■ 72 MHZ

MADE IN U.S.A.

\* EFFECTIVE 1 SEPTEMBER 1972

COMPARE THE FEATURES WITH SETS COSTING HUNDREDS OF DOLLARS MORE-THEN BUY **CANNON**

CANADIAN SALES AND SERVICE

H. &amp; W. ENTERPRISES

BOX 972

REGINA, SASK.

DEALER DISCOUNTS AVAILABLE - WRITE FOR  
TERMS. THIS EQUIPMENT AVAILABLE ONLY FROM CANNON  
ELECTRONICS - NOT THRU LOCAL DISTRIBUTORSRETAIL CUSTOMERS IF YOUR ■■■■ NOT STOCK CANNON EQUIPMENT, ORDER DIRECT  
FROM FACTORY. CASH ORDERS SHIPPED POSTPAID. C.O.D. ORDERS MUST INCLUDE ■■■■ DEPOSIT. ORDERS  
FILLED IN ROTATION. PLEASE SPECIFY MODEL ■■■■ FREQUENCY. CALIF. RESIDENTS ADD SALES TAX.

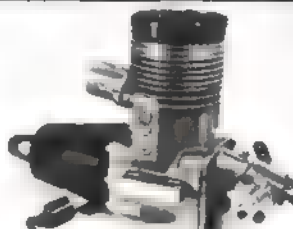
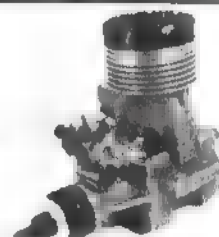
with her previous Nats winning B-26 when an engine failed during flight causing the plane to come in on the lines destroying her chances for another win this year. Ouweteen managed to nurse his underpowered and tail-heavy P-61 around the circles for five laps to qualify for a second place in the Senior category.

The only plane having operating features other than the normal throttle control and flaps configuration was the 1 3/4" scale Hawker Hurricane MK-2-G by Lynn Sidabras which dropped fuel tanks after making his qualifying flight.

Dr. Charles Kirkland (Chicago, Ill.) entered one of the most talked about planes in this year's meet. Everyone waited for the moment when Kirkland brought out his 1904 Philips Multiplane for a qualifying flight. The question everyone wanted answered was "Would it fly?"

Before answering that question let me give you a few details about the plane. It was built to a 2":1" scale giving the plane a 36" wingspan, and was powered with a Fox 59 (almost as old as the plane). For those of you that don't know what a Multiplane looks like, just imagine an open Venetian blind with a small fuselage attached to the bottom of the blind.

Now back to the flight line. Kirkland got set on the circle, started his engine, set the needle valve, and went out to the center of the circle. He called for the release of the plane. It moved out and around the circle picking up speed.

O P S SPEED WITH TUNED PIPE  
MARINE, CAR, AERO R/C AND SPEED VERSIONS**ops  
60**  
Front Intake  
RC  
or  
Rear Intake  
SPEED

O P S FI-60 "URSUS"

**FEATURES**

- A. B. C. PISTON & SLEEVE ASSEMBLY
- SCHNUERLE DIRECTIONAL PORTING
- TWIN PRECISION BALL BEARINGS
- SMOOTH IDLE
- INSTANT THROTTLE RESPONSE
- HEMISPHERICAL COMBUSTION CHAMBER
- SQUISH BAND HEAD

READILY AVAILABLE PARTS  
MUFFLERS — PERFORMANCE GLOW PLUGS**Shamrock Competition Imports**P. O. BOX 26247  
NEW ORLEANS LA. 70126  
(504) 242-5967

SEE IT AT YOUR DEALER — ASK FOR FREE NEWS LETTER

**TESTORS****Hobby Model Products**

# SUDDEN SERVICE PLANS

Full-Size Plans — Shipped First Class Mail Within 48 Hours — No Extra Charge

No. 0701. **Buds**—Nimble RC for sport or competition. One-piece construction, 40 to 60 engines. Build fast from standard balsa sizes. By Joe Dolan. \$4.25

No. 0702. **Contender**—Military-like RC, also Sport/Stunt type for 35-60 Tri-ear, removable no-dineral wing. Fast building. By Dave Matt. \$4.25  
**Special Offer:** Get both **Buds** and **Contender** plans for only \$7.00

No. 0703. **Ironides**—Record-holding CL jet speed model. Metal or wood model shown. Uses Dyna-Jet. By Jerry Thomas. Two plan sheets. \$1.25

No. 0704. **Cassia AW**—Delightful stick and tissue FP or great private plane of years ago. Indoor or outdoor version possible. Peanut Scale too. \$1.50

No. 0801. **Winnie Mae**—Spectacular RC Vega for strong 60 engine in 37-1' scale, foam and balsa, lots of details. By Murry Groves. Two big sheets. \$4.50

Also, special 1 1/4"-1' version for FAI scale, 40 thru 60's. Two sheets. Order as No. 0802 \$4.25

No. 0803. **Thermal Dart**—Enlarged and improved rubber-powered beginner's delight. By Frank Ehling. \$1.00

No. 0804. **SV-141 B**—Asymmetrical WW II fighter bomber in profile for 60 engine by Terry Aldrich. Easy to make, good flier. \$2.00

No. 0901. **Scrocker**—Lee Wae 02-powered, free-flight flying saucer uses short wing, easy to make by Tenderfoot builder. \$1.00

No. 0902. **Cloud 9**—Intricate contest winning Wakefield by Roger Gregory. Plan shows streamlined prop/hub design. \$3.50

No. 0903. **Antoinette**—Signorino/Zindel RC 08 wing, nearly scale, flies well on .30, like powered gliders. Plans 3 huge detailed sheets. \$9.00

No. 0905. **Mini Cat**—Bud Atkinson scaled down the Cat series, for pulse or light digital and up to 10 engines. Easy to make RC sport flier. \$2.75

No. 1001. **Phantom**—Well-engineered RC Dyna-Jet-powered scale fighter by Ralph Saldívar is practical but noisy model. Highly detailed plane. Jet installation shown. \$4.00

No. 1002. **Hobbit**—Simplified Nordic AF by Bob Stallck is steady on tow, all weather flier. \$1.50

No. 1003. **Charger**—3A powered sweeping stunter does full pattern on long lines safely. \$2.00

No. 1101. **Autogiro**—Simple 040-powered model builds fast and gives unique performance. Pusher prop or motor. \$1.25

No. 1102. **Aerobills**—Large scale CL or RC of a famous Waterman roadable plane. Uses 45-60 motor. Wing detachable, car drivable! Large single-sheet plan. \$4.00

No. 1103. **Akromaster**—RC scale/stunt model neutral aerobatic plane for 45-60 engine. Fast and responsive, easy to make, simple shapes. \$2.75

No. 1104. **Tardon—Formula II** semi-scale piston racer or stunt model for 40 engines. Won event 1968 NATS. Stunt flier. \$3.00

No. 1201. **Sillette**—Unique 3/4A propo model uses much-extended 1/8" shaft for clean prop thrust and speed. \$1.00

No. 1202. **King Kong**—Huge flat-land stunter for competition use has 12' wing of glass, foam, and balsa. By Sarcophus. \$3.25

No. 1203. **IO-HI**—Six-foot span, 040-powered flying wing is high-performance model with spotting chair. Huge plan \$3.50

No. 0116. **Dragonfly**—Fast graceful competition stunter by Phil Kraft. Uses big 60's. Retracts \$4.00

No. 0112. **Toothpick**—Long thin winged combat CL ship is both fast and quick turning. For hot 35's \$2.25

No. 0413. **Luton Minor**—Delightful 10-powered semi-scale RC for three light servos is high-winged parasol monoplane. \$2.25

No. 0211. **Cobra**—Steve Wooley's great, smooth-flying CL stunt ship for 35's. Light model, ideal for FAI and AMA patterns. \$3.50

No. 0212. **Voodoo**—Converted Goldberg kit for streamer-towing RC model, by Ed Sweeney. Two servos with 10 engine. For new event. \$2.75

No. 0213. **Gullflier**—Modified from CL for RC combat. Maneuverable, fast, responsive, and fun. Glides well. For two servos and 10 engine. For new event. \$2.75

No. 0312. **EKKO**—A compact FAI pattern and sport model for 35 engines. All wood low-winger. \$3

No. 0311. **Skydancer**—Two-channel equipped RC stunt glider using aileron and elevator control. Luffed by new, powerful inker motor. \$2

No. 0411. **P-51 Mustang**—Semi-scale 040-powered with AHF Lanier or Bee line wing on balsa fuselage. Idealistic and quick construction. \$3.25

No. 0412. **Grouper**—Unique in appearance, oval balsa fuselage hides a big 60 engine. Easy-to-make stunter for commercial AHF wings. \$3.25

No. 0413. **Dauntless**—Low-wing scale profile FP model for sport flying on inexpensive 020 engine. \$1.50

No. 0414. **Nasmith Cougar**—Semi-scale CL model is boxy homebuilt. Fine beginner's scale model using 10 A winner with detail. \$3.50

No. 0511. **Five Wagon**—Contest free flight model for 1/2A, by James Clem. Diagonal-ribbed wing resists warps. \$4.75

No. 0512. **Platypus**—Unusual-looking RC aerobatic seaplane, made with balsa-covered foam blocks. Uses a 10. \$3.00

No. 0513. **Troop Glider and Tug**—Two models, one a twin-engine, 10-powered 040 profile, the other a scale CG-15 troop carrying WW II glider. Both on one large plan \$2.75

No. 0611. **Phantom Stunter**—Very realistic jet-like model of Hine Angels plane with typical stunt moments and airtail. For 35-45 engines. \$2.75

No. 0612. **Crusader Stunter**—Anhedral wing, ventral fins and full array of missiles and drop tanks. It is a unique but truly competitive flier on a 35 to 40 engine. \$3.00

No. 0613. **Simple Fly**—Semi-symmetrical 74 airtail low-wing on box fuse. Performance for beginner on 20 or novice contest ship with a 50 \$2.50

No. 0614. **Sopwith Pup**—Simple or multi-channel, nearly-scale model for 14 to 18 power. Highly detailed plans. Stable flier. \$3.50

No. 0615. **Santana**—Jon Davis' contest-winning towliner A/1 Uses fiber-glass boom, stiff wrap-resistant wing. \$2.00

No. 0711. **Phoenix S**—Don Lowe's latest in a series of sweep-wing competition stunter for 10 and retract. \$3.00

No. 0712. **Bonanza/Dobonair**—Build either V-tail or conventional version of this popular fast light plane for full-house radio and a strong 60. Fine-flying ships, foam wing construction. \$5.00

No. 0713. **I.F.O.**—Would you believe a FF 020-powered flying saucer which really flies! Built-up construction looks real. \$1.00

No. 0714. **Helldiver**—Semi-scale CL model of WW II torpedo bomber builds fast and is rugged. \$1.50

No. 0811. **Douglas Mailplane**—Large FF scale of Western Air Lines M-2 biplane. For 08 power. Could fly with light radio. \$3.00

No. 0812. **Hot Canary**—Unique Formula 11/FAI racing biplane by Bob Sigelhoff. Although unusual-looking, it is fast and quietly built. \$3.25

No. 0813. **Pogo**—Model of Owl Racer for Formula 1 features midwing, low stab, non-checked cowling. Very stable and plenty fast. By Bob Morse. \$3.50

No. 0814. **Flying Fortress**—Not a scale plane, but a novelty CL flying medieval castle for a 10 \$2.75

No. 0911. **Fletcher**—McCullough's magnificent tri-gear, low-wing drop duster scale job for 60's. Generous area and moments. All balsa. Highly-detailed plans on 2 sheets. \$7.50

No. 0912. **Killer**—Fast, responsive combat plane. All-balsa for 35's has many wins. \$3.00

No. 0913. **ACE High**—Featherweight 040-powered RC glider uses a set of ACE RC foam taper and constant chord wing sets. \$2.25

No. 0914. **Sakitumi**—Highly-developed 40-gram Wakefield plane by Brian Dugan features latest trends in gadgets and design. Well-detailed plan. \$3.00

No. 1011. **FAI Man**—Competition FAI free flight job for screaming 15's. Simplified construction with warp-preventing wing. Build a winner. \$2.75

No. 1012. **Paraglider**—All-out RC slope soaring racer for ailerons and elevator. Balsa fuselage with foam wing. \$3.50

No. 1013. **Hi-Pro**—Highly proficient slope/thermal soarer. Build several versions from these plans. Balsa wing and glass fuselage. \$3.50

No. 1015. **Marut**—Named for the Wind Spirit. Designed for windy weather CL contests. Large-scale jet appearance uses 45 engine. Two sheets. \$4.50

No. 1111. **Longster**—Large-size free flight scale ship for 08 power, also ideal as small RC. Construction similar to real plane. \$2.75

No. 1112. **Buster**—Built-up profile Goodyear racer well-streamlined and a winner. For hot 15's. \$1.75

No. 1113. **Blippi-Bippi**—Delightful scale-like rubber-only or GG model for single channel and 08 engine. A fun plane. \$2.75

No. 1211. **Fireball**—Jim Walker's great design presented as it was by Bruce Land. For ignition 23's or smaller on glow. \$2.00

No. 1212. **Brooklyn Dodger**—Rai Taibi's great old-timer FF job presented as it was by Bob Harris. For ignition 23-35 or smaller glow engine. \$1.75

No. 1213. **Canus**—Sixty-powered and large-scale FAI aerobatic RC plane. Very quick building. \$4.00

No. 0125. **Firecracker**—FAI scale RC piston racer with special fast airtail and homemade retract (in text), a winner by Bob Root. \$3.50

No. 0121. **Penguin**—Unusual scale CL flying model of post-WWII pre-flight trainer. Simple and RC-able. Uses 19 to 35 engine. 3-views on plan. \$2.50

No. 0122. **Pay-Up—TedDew** 020-powered AMA Pay Load event winner also nice for sport FF. Simple and sturdy. \$1.50

No. 0123. **Nifty Novice**—049 thru 15 power for monoplane or biplane Tenderfoot CL trainer. With power, biplane is suitable. SPECIAL PRICE \$1.00. deal included.

No. 0124. **P-38**—Semi-scale WWII fighter with single 049 flies rudder-only pulse RC with ACE mini-foam wings, others usable. \$1.25

No. 0221. **Big Flapper**—Large high wing 14 decale flier for a 60 engine and 4 channels. Nice trainer/sport plane. \$3.50

No. 0222. **SV-170**—Three 35's power this out-of-scale German profile fighter. It is big, pulls hard in flight, stunts too. \$4.75

No. 0223. **Canard Drop-Off**—Rubber pusher sport flier drops its prop and rubber when unwound, then drops a plug-back glider. All balsa and flies great. \$2.00

No. 0224. **Cardinal**—Excellent FAI European-type RC pattern plane of foam/balsa construction. Up-to-date ship if for 60's, suitable for retract. \$4.50

No. 0321. **Turbo-Pilatus Porter**—Fine flying 002 10 Rubber powered FF scale model and scale floats for ROW. All on one plan. \$1.50

No. 0322. **Little Bird**—Midwing RC pattern plane handles wide range of power up to 71's, yet is small in size. \$3.50

No. 0323. **Two For the Show**—Biplane CL stunter for 049 Tee Dee. This one offers precision flying in small areas, great for practice. \$1.50

No. 0324. **2T—ACE**—foam-winged RC trainer for 049 power carries 2-channel bricks with ease. Ample wing area for long glides too. \$2.00

No. 0421. **Quarter Pint**—A 020-powered Tenderfoot free flight patterned after an antique design of 30 years ago. With deal. \$2

No. 0422. **RCX-4**—Ray-like winged sport RC plane for big motors, 4 channels, and crowd-pleasing flights. \$4.50

No. 0423. **Squeaky-Banner**—FAI combat anyone? Fast flying 15 ship from Canada is a winner. \$2

No. 0424. **Dragonette**—Compact version of Kraft's Dragon Fli uses hot 10 and flies just like a big one—fast and smooth. \$3

## AAM PLAN SERVICE 733 Fifteenth St., N.W. Washington, D.C. 20005

Please send the following plans by First Class mail, at no extra charge. I enclose \$\_\_\_\_\_ for payment.  
For foreign orders please add 25% for postage.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## PLAN NO. COST

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

# \_\_\_\_\_ \$ \_\_\_\_\_

Total: \$ \_\_\_\_\_

No. 0521, **Satellite 1000**—Huge and highly-detailed plans for one of FF's most winning designs. For screaming 40's. \$8.80

No. 0522, **Lil' Rebel**—Fast and very durable 15 Goodyear CL racer is a consistent winner. \$2.25

No. 0523, **Pegasus**—A take-apart RC job designed for transportation in its own box. Full house with a 18, stunts well. \$2.50

No. 0621, **Bo-Long**—miniaturized Old-Timer for D20 power event and sport flying. Easy to make. \$1.50

No. 0622, **Denight Special**—Well updated four-year-old Forum 1 racer by deBolt has many unique features for speed. All balsa construction. Two-sheet plans. \$2.00

No. 0623, **Chances Vought "Skimmer"**—U.S. Navy experimental shipboard fighter is real flying saucer. For profile carrier events, by Frank Scott. \$4.50

No. 0721, **Douglas Overstater**—Navy Carrier competitor for 40 or 60 of colorful shipboard fighter. A tough plane and a winner. \$3.00

No. 0722, **Wizrod 350**—Hon. St. Jean's combination of past FF power winners in a 350 sq. in. 040 screamer. \$1.75

No. 0723, **Quickie**—4-RC competitor for Class A and B. Conventional looking low wing flies easily, builds very fast. \$2.00

No. 0821, **Capitan**—For one- or two-channel RC, a small sport/scale all-balsa glider. Has a fine glide. \$1.00

No. 0822, **Nemesis II**—Howard Rush's winning AMA Combat ship. Ultra-light, balsa and silk, very quick. \$2.25

No. 0823, **Apteryx**—New style Mylar-foam wing on fast, tough, AMA Combat plane by Robert Mellen. Construction offers perfect airfoil and tapered wing. \$2.25

No. 0824, **Ryan SC**—Unusual 040 free flight scale model in low wing with excellent flight stability. Flies fast and handles wind easily. \$2.75

No. 0825, **B.S.P. Helicopter**—Gene Rock's simplified and well-proven design for home builder needs minimum critical machined parts. Features belt-drive, 45-60 engine, gyro stabilized main and tail rotors. Large, highly detailed plan full-size including sub-assemblies. \$8.00

No. 0826, **Full-size drawings for making special machined parts for Gene Rock's RC Helicopter**. Not essential, parts are available from Stock Drive Products, Inc. See article. Parts plan only \$2.00

No. 0921, **Hot Pants**—Jerry Nelson's large-bodied, realistic-looking, home-bill type RC Pattern design. Smooth flyer uses all-moving stab. \$4.00

No. 0922, **Aqua-Vent Floats**—Simple curves make these easy to build. Sized for 1/2 or 1/4 powered planes. Designed for quick lift-off with low power. \$2.50

No. 0923, **Vartigo**—A CL vertical take-off-and-landing biplane. Uses throttled 18 for power. Really flies, lots of fun. \$2.75

No. 1021, **Bronco**—A Class I or II Navy Carrier plane for two 1/4 or two 2/5 of the OV-1A C.O.I.N. fighter. The large plan sheets. \$6.00

No. 1022, **Lockhead B1**—Unique highly-detailed scale biplane of Lockheed's first all-plate original dates to 1921. Design by M. Groves, uses a 40. Two sheets. \$7.00

No. 1023, **Quasimodo**—An odd-looking four-channel RC Sport job for 35s. Shoulder wing, tail dragger. A fun flyer. \$4.00

#### THIS MONTH'S PLANS

No. 1121, **Warlock**—Mid-wing, tandem bicycle retractable, all-flying stab, and swept wing are features of this 40-powered Pattern ship by Jim Wilms. Large plan. \$6.50

No. 1122, **Sweet Pea**—"V" tailed CL stunter by Dennis Adamisin is consistent winner with semi-scale Goodyear-racer appearance. Takes smooth 35 or muffled 40. \$3.30

## Tired Of Cranking With A Bad Plug Or Weak Battery?



\$29.95

Post Paid Cent. U.S.A.  
Ind. Res. Add \$1.00  
Dealer Inquiries  
Invited

## CHARG R START is for YOU!

AMMETER INDICATION OF BATTERY ■  
PLUG CONDITION  
SELF CONTAINED BATTERY AND CHARGER  
PILOT LAMP AND REMOVABLE POWER CORD  
2 x 4 x 5 ALUMINUM CASE

DEVELOPED & PROVED THRU  
EXTENSIVE FIELD TESTING



Send check or money order to:

D A ENTERPRISES  
BOX 335, HAUBSTADT, INDIANA 47639  
MANUFACTURERS FOR THE AERO MODELER

When the plane had run about one third the way around the circle a little up elevator was applied and the plane was airborne, but not for long. It did what many of us thought it would—a small loop and back down to the ground to collapse in a heap much like an open Venetian blind would when dropped to the floor. I can't imagine what could be done for an encore that would top this performance. It should be noted that during my discussion with Dr. Kirkland about his plane he had indicated that this particular plane has never been done for CL before. Now I know why.

Ernie Violet (College Park, Md.) a lot more successful in the Open Class than Dr. Kirkland by flying his finely-detailed Boeing Kaydett N255 to a first place win. Ernie's plane was powered with a K&B 45 and was equipped with throttle control.

John Glab (Chicago, Ill.) defended his Senior crown for the third year in a row by flying a well-executed eight lb. SE5A which was powered by an ST 60 and equipped with throttle control.

Darrin Matthews (Greensburg, Kansas), a newcomer to the Scale circles, captured the Junior Class with a well-done Volksplane.

Dan Frey (Wawatose, Wisc.), also a newcomer to the Scale circles, was part of a club effort by the Circle Airs YMCA to garner wins in all categories of the Scale event. While Andy Arhelger and Lynn Sidabras of the Club made it by taking places in the Junior and Open Classes respectively, Dan did not fair so well. Dan was flying a 12 lb. Martin Mauler which took much coaxing to get it airborne. When he finally did get into the air on his final attempt, he wound up missing a place in Senior by about a half lap of flying. It was a great club effort. I'm sure that they learned a lot, and that they will be back in force again next year for another go at it.

Semi-Scale Stunters Come of Age—It seems that the Stunt fliers have hit upon the magical combination of good flying characteristics and scale appearance as all three first place winners at this year's National Stunt competition flew semi-scale type planes to the winners' circle.

Al Rabe (Irving, Texas), a pioneer of the true semi-scale stunter several Nats ago, finally hit the right combination with his excellently built and executed

Seafury stunter to capture first place honors in the Open Class. Al's Seafury weighed in at 73 oz., some 20 oz. more than most Stunt fliers feel is a good flying weight for this event. The effect of the extra weight was well balanced by the use of an ST 60 providing the necessary power for a smooth clean pattern. Al also used a movable rudder on the ship to prevent yaw during maneuvers, and a shock absorbing landing gear for good takeoff and landing characteristics.

Dennis Adamisin (Taylor, Mich.) was the winner in the Senior Class flying a semi-scale Fouga Magister. Dennis's plane weighed in at the more conventional weight of 54 oz., was powered by

**HAPPY (happy) adj. increased by well being, comfort, pleasure, satisfaction as in flying TERN MODELS.**



SEE YOUR DEALER TODAY, IF UNAVAILABLE  
U.S. ORDER DIRECT, ADD 10% FOR POST-  
AGE & HANDLING, OUTSIDE U.S. ADD 15%

**TERN AERO**  
P.O. BOX 56398  
CHICAGO, ILL. 60658

Leaders in  
Authentic Scale



**Guillow's**  
**BALSA**  
**FLYING MODEL KITS**

America's line of scale balsa  
airplane simple build-by-number  
kits. Send 10¢ for complete catalog.  
PAUL K. GUILLOW, INC., WAKEFIELD, MASS. 01880

**E-Z JUST**  
CONTROL HANDLES  
with preformed loops

"Standard" 5-inch size,  
ideal for stunt and combat  
ships. Quick hook-up,  
adjustment and sure-lock  
150 lb. min. pull test. Mat  
fuel-resistant plastic handle.

At Leading Dealers \$1.50

"MINIMOUNT" TEST STANDS  
for engines up to  
.19 displacement \$1.75

**PHIL-LEYS**  
BUFFALO 25, N.Y.

FINGER TIP ADJUSTMENT—NO SCREWS,  
NUTS, OR TOOLS NEEDED

# 1973 R/C PRODUCTS DIRECTORY

SIG MFG. CO.



**KOMET**

Wing span 67" Area 670 sq. in.  
Engine .45-.60 Weight 7 lbs.  
Mat'l. . . . . Balsa fuselage, foam wing  
Sug. retail price . . . . . \$37.95 w/balsa  
\$42.95 w/plywood

Designed by Maxey Hester and performs  
the complete AMA and FAI patterns in  
the hands of a sport flier.

**PICTURES**

**SPECS**

**PRICES**

## THIS IS IT!

**hundreds & hundreds & hundreds of listings**  
**every manufacturer represented**  
**most up-to-date information**  
**only directory like it available**

**\$2.25**  
post - paid

SEND TO: R/C PRODUCTS DIRECTORY  
733 15th Street, N. W.  
Suite 526  
Washington, D. C. 20005

a Max 35 and featured a semi-matte paint finish.

Mark Bauer (Norridge, Ill.) flew an original take-off on the Eindecker to take the first place slot in the Junior category on this his third try at Nats Stunt competition. Mark's plane was powered by an ST 40, weighed in at 50 oz., and featured adjustable wing tip weight and a movable rudder for better flying characteristics in the turns.

The competition in all three categories was very tight as shown by the final results. In the Open Class Rabe won over Gieske by two points. Adamisin in the Senior Class bested Jackson by only .75 points, while Bauer beat Peterson by four points in the Junior event.

A great bit of flying by all. It might be noted that in addition to the three first place winners flying semi-scale planes, Bill Rutherford (Dallas, Texas) flew a well executed P-51 for a third place in the Open Class, while Lew McFarland (Lexington, Ky.) flew his Akromaster to the fourth place position. Yes, this was the year for the semi-scale stunts.

At the time of this writing the Jim Walker fly-off to determine the overall Nat's Stunt Champion had taken place, but the trophy had not been awarded. Senior Dennis Adamisin put in a good flight topping Al Rabe's performance by about two points. However, the question of whether or not appearance points should be counted in the overall scoring was raised. If appearance points were to be counted, the score would have been in favor of Rabe as he had about six more points in appearance than Adamisin. It might also be pointed out that with the K factor system of judging used in this year's competition, only a half point difference in a judge's mark on one maneuver could have made the difference between a win and a loss.

I don't know how headquarters is going to resolve the problem, but I do know that from talking to some previous Jim Walker winners that appearance points were not counted. The win made on flying only. If this precedent were applied to this year's flyoffs, Dennis Adamisin would be the Jim Walker Trophy Winner.

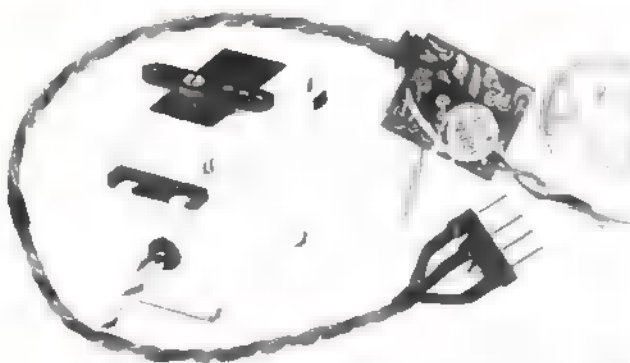
### SWEET PEA

(Continued from page 47)

tip skids, twin rudders, single rudders and, in the case of this craft, no rudder.

After all these different designs we have reached a conclusion: Keeping the basic designs similar, the number of good flying aircraft but different-looking designs is endless. Building the exact same airplane every year because you are afraid to change is silly. All it does is put you in a rut which gets deeper each year. Even if you are successful in competition, there is eventually and inevitably a time when you will be beaten. Anyone who builds the same plane year after year without innovating or experimenting is not going to have experience with different designs, and therefore will not know in which direction he is going. Also, no

## Tech IV Servo Kits at New Low Prices



RS-4 Servo Kit with Brunner  
Connector (shown above) — \$19.95

**royal**

Bridge Type Output Circuit  
Tightest Centering Available  
Works with 1970, 71, 72 Royal Classic  
AAM 2CH (Fred Marks) — Blue Max  
Sets Designed for IC Servos  
Instructions Include Trouble  
Shooting Guide  
Select Servo Mechanics  
RS-1, 4, or 6; PS-3, 4;  
KPS-10, 11, or 12.  
Write For Complete Servo Price List

Electronics Corporation  
2119 SO HUDSON DENVER  
COLORADO 80222 (303) 756 2281

# TOWER HOBBIES

P.O. BOX 2874 STATION A • CHAMPAIGN, ILLINOIS 61820

### MONOKOTE

OPAQUE	\$5.00
TRANSPARENT	\$5.60
METALLIC	\$6.50

NO MINIMUM - NO LIMIT

### SOLARFILM

OPAQUE	\$4.50
TRANSPARENT	\$5.00
METALLIC	\$6.00

NOVEMBER SPECIALS! ACCESSORIES: GOLDBERG Retracts Trike \$14.75, Mains \$7.95; ROBERT Hinge Points (6) \$.75, (15) \$1.55, Drill Jig \$2.25, Horny Hinge Point (4) \$.65, Super Shoe \$2.25; UNIVERSAL Scale Wheels 3" \$.80, 3 1/4" \$.95, 1 1/2" \$.40; DEVCON Large \$1.60; DREMEL Moto-Shop 571 \$30.00 (SPECIAL); SEALECTOR Sealing Iron \$10.95; POLYTHERM Heat Gun \$28.00; MONOKOTE Opaque Trim \$.80, Checkerboard \$1.00; KRAFT KP-5 (all new channel) \$240.00, KP-25 \$103.00. RC ENGINES: ENYA .09 \$12.45, .15 \$13.75, .19 \$15.75, .19 BB TV \$25.50, .19 Marine \$18.00, .29 \$18.25, .29 BB TV \$23.25, .35 \$19.50, .45 BB TV \$31.00; FOX .15 \$12.00, .25 \$14.25, .40 \$18.00, .60 Eagle \$34.75; HP .61 \$55.95, .40 FR \$39.25; K&B .40 FR \$24.25; NORTHFIELD-ROSS Twin .60 \$106.00; VECO .19 \$20.75, .61 \$42.75; MERCO .11 \$38.00, .49 \$35.00, .11 \$22.00; WEBRA .61 \$60.50, .61 Marine \$84.00, .40 \$45.00. OS & SUPERTIGRE on request. KITS: AFI Malibu \$18.00, Monterey \$21.50; AIRTRONICS Olympic 88-99 \$28.50, Mini-Olympic \$17.50; ANDREWS Minimaster \$21.50; BRIDI Kaos \$39.80; RCM Trainer \$35.95, RCM Basic Trainer \$20.75; DUMAS Hi-Pro Glider \$29.95; GOLDBERG Falcon 56, Ranger 42 \$13.95, Sr. Falcon, Skylane 62 \$25.50; GRAUPNER Kwik Fli III \$41.00, Middle Stick \$31.00, Cumulus Glider \$92.50; LANIER Invader \$44.95; MARK'S Windward \$18.00, Windfree \$23.50; MIDWEST Cessna Cardinal ARF \$15.95, Ez Juan \$20.95, Nieuport, Fokker \$15.50, Little Stick \$16.25; STERLING Fiedgling \$18.50, Schweizer 1-34 \$20.95, 1-26 \$14.95; TOP FLITE P-51 Mustang \$30.00, P-40 Warhawk \$33.50, Flite Streak \$5.95; VK Cherokee, Navajo \$27.75. HELICOPTERS: DUBRO \$87.50, Bell Huey Cobra \$280.00, MRC-KAVAN Bell Ranger \$280.00

### ALL NEW CATALOG

Over 60 manufacturers at the lowest prices anywhere! Yours in our completely new Fall discount catalog. Send 25c in coin or stamps for your catalog, or receive yours free with any size order. Do **TODAY!!**

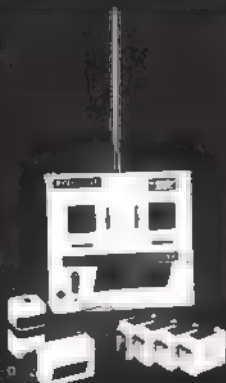
### HOW TO ORDER

Add \$1.00 to each order for full insurance, postage and handling. Alaska, Hawaii, Canada, and Foreign orders, add \$2.50. Check or money order only. Current catalog included with every order. SATISFACTION ALWAYS GUARANTEED

EXCLUSIVE FOR THE MODELER  
FROM DEMBROS HOBBIES

CHECK THE STARS THAT  
MAKE UP STARFLITE

STAR-  
FLITE  
\$199.95



- ★ Extra Transmitter Power Output
- ★ Fixed Frame Rate Logic
- ★ New Rand II Axis Sticks
- ★ White Vinyl-Clad Trans Case
- ★ Provisions for Buddy Box Installation
- ★ Lowest Cost Basic—Full House System
- ★ Charger and All Nicads Included
- ★ New 2-Wire Battery Pack
- ★ New 3-Wire Servos
- ★ I.C. CHIP Receiver Decoder
- ★ I.C. CHIP Bridge Servo Amplifier
- ★ Small Size—Lightweight
- ★ 90-Day Factory Warranty
- ★ Choice of Servos—C-E1, C-E2, C-E3
- ★ Choice of Flat or Square Battery Pack

The full retail of this high quality radio will be \$269.95 — introductory offer of \$199.95 good 'till Nov. 30, 1972

27 MHZ  
w/C-E1 servos

● 72 MHZ, add \$10.00  
C-E2 and C-E3 servos, add \$3.00 per servo

**Dembros**  
HOBBIES, INC. 51 LAKE ST. CHAMPAIGN, ILL. 61820  
800-442-4422  
COMPETITIVE  
PRICES  
Plus  
NO SALES TAX  
IN N.H.

For fast service send M.O. or bank check. We allow personal checks to clear before we ship. Bank-america and Master Charge accepted. Include M.C. Interbank Number. (lower left corner) and expiration date.

# BOB HOLMAN PLANS — Best In Scale Since 1960

P.O. BOX 741M, SAN BERNARDINO, CA 92402

AK  
59732

FIRST WITH C.A.P. SCALE KITS  
ALL C.A.P. KITS SHIPPED AIR FREE

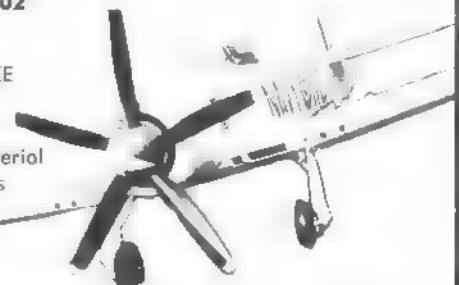
Send 50c for best in scale catalog

**COMPLETE-A-PAC PLANS-KITS**

Aerob Modeller Plans and Reference Material

Allen Dennis Bryant Plans Reference Books

A Complete Scale Service



**SEA FURY 1.5 SCALE 57" SPAN**

New Palmer 28 oz. Epoxy Fuselage

With Canopy \$39.95 F.O.B. California

Plans \$4.50 — New Foam Wings \$15.00

FIRST 72 NATS

C.A.P. Skyraider 62½" Span

Plans \$5.95 — F.G. Cowl \$9.00

Detailed Canopy \$3.50 — Foam Wings

144 Page Book (with color)

Free when shipped as complete package

## AMERICAN AIRCRAFT MODELER LIBRARY SERIES

### All New! R/C Car Racing



### Getting Started in R/C?

START TODAY—order  
Howard McEntee's

**"GETTING STARTED IN R/C."**  
Nineteen chapters of this informative series are now in a single volume at the low price of \$1.25 ppd. Use this book as a firm foundation for a start in Radio Control. Use the coupon below.

GO! Read George  
Siposs' new book.

**"GETTING STARTED IN R/C CAR RACING"**. Volume III of the AAM Library series is ready and waiting for you. Everything about R/C Cars is explained for the beginner and professional alike. History and basic elements, engines, chassis, learning to drive, ROAR rules, and that's just the beginning.

### Interested in Control-Line?

START OFF with  
Howard Mottin's

**"GETTING STARTED  
IN CONTROL-LINE."**

It's Vol. II in AAM's library series for the novice and the expert. Chapters cover all aspects of C/L—where to start, how to build, trim and fly plus a thorough review of competition events. \$1.25 ppd. Use the coupon below.

**\$1.25 each or \$3.00 for all three!**

#### GETTING STARTED - AMERICAN AIRCRAFT MODELER

733 Fifteenth Street, N. W., Washington, D. C. 20005

I've enclosed \$...for...copy(s) of Mottin's GETTING STARTED IN CONTROL-LINE. (Price: \$1.25 each).

I've enclosed \$...for...copy(s) of McEntee's GETTING STARTED IN R/C. (Price: \$1.25 each).

I've enclosed \$...for...copy(s) of Siposs' GETTING STARTED IN R/C CAR RACING. (Price: \$1.25 each).

I've enclosed \$...for...set(s) (One each of the above), at \$3.00 per set.

RUSH TO: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

two airplanes—no matter how similar—have ever flown exactly the same; they may all fly well but are just a little different. A slight difference in relativity, turn radius, line tension and engines can mean a different flying plane.

With regard to the appearance points controversy, there seems to be growing sentiment for dropping appearance points from the AMA Pattern. Proponents of this idea claim dropping appearance points will increase interest in Stunt because competitors wouldn't have to spend as much time building. These people also claim Stunt is primarily a flying event and appearance points shouldn't play any part in the final outcome.

I consider both these views irrational and unfounded. Many modelers in different parts of the country, including my own, have dropped appearance points at local contests in an effort to improve participation. They have found that in the long run only Stunt fliers participate anyway. All stunt planes are time consuming to construct. If you want to be competitive in this event, you have to build one; if you don't have the desire or ambition to do this, you can forget about competing.

I partially agree with those who contend that Stunt is a flying event. The existence or nonexistence of appearance points is not going to make it easier to spend long, grinding hours practicing. A major difficulty is the way some judges score. In four days of flying at the 1971 Nationals, only one flier, the Senior winner, scored over 500 points (503). It is unrealistic to say that the best fliers in the country cannot fly high 500-point patterns. A flier should be awarded the full value of his maneuver. Too many judges give a great maneuver 29 points and a bad maneuver 22 points. The AMA scoring allows for a 30 point spread from top to bottom—use it! Give credit for a maneuver which deserves it. Doing this would lessen the effect of appearance points and put the emphasis on a consistent quality pattern.

If we drop appearance points, the whole quality of the event is going to drop with them. Except for Scale events, Control Line Stunt is the only AMA event where the quality of the airplane is judged. There are some small U-Control stunts available in ARF. If

# New **A semi-scale military fighter** **Ready-to-Fly** model by Lanier

129

\*Assembles in  
5-12 hours

Nothing to cover,  
build or paint.

U.S. Patent Nos.  
3523990  
3585753  
3545481

Flies complete  
FAI and AMA patterns

## Specifications

- Wing span 55"
- 550 square inches
- Engine size .35-.60
- Weight 4lb. 10 oz. (.45eng.)  
5lb. 11 oz. (.60eng.)
- Fuel capacity 12 oz.
- Finish - 6 Hi-Gloss colors

# The great new **Invader** by Lanier

Check these  
new construction features

Permanent bonded, hard wing and tail covering plus plywood reinforced aft fuselage provides durability. Pre-slotted hinge locations and bolt on wing and belly pans provide quick accu-

rate assembly. Molded in exit guides smooth-out operation. Super detailed cockpit insert gives realism. Interchangeable spare parts available.

**\$59.95**

less engine,  
accessories  
and radio

**Lanier**   
**RC** Our 10th Year

LANIER INDUSTRIES, INC. Oakwood Rd., Oakwood, Ga. 30566 Phone (404) 532-6401

### Ordering Information

Immediate delivery from our complete stock of parts and kits... thru your dealer... or same day shipment - postpaid.

# BEFORE YOU BUY FROM SOMEONE ELSE...READ OUR CATALOG

## Here's 3 reasons why...

### DISCOUNTS

1. Our 72-page, illustrated catalog no. 53, lists thousands of items — 90% OF THEM ARE DISCOUNTED **BELOW THE RETAIL PRICE**. Send now... your catalog will be in the mail the same day we receive your request.

### FAST DELIVERY

2. Delivery of requested items is in 2 to 5 working days from the day we receive your order. Please allow up to 10 days for your order if you live in an out-of-the-way place.

### LARGE STOCK

3. Lindco carries thousands of brand name items from the hard-to-find to the common — if it's available, chances are excellent we've got it IN STOCK.

SEND NOW FOR OUR CATALOG... (Please enclose \$1 for handling — refundable with minimum purchase of \$10.)

### EXTRA

EXTRA BONUS ON ALL FPO-APO CUSTOMERS. (Send for more information.) C.O.D. orders accepted on your phone call. Please... no collect calls. NOW ACCEPTING BANKAMERICARD AND MASTERCARD.

**lindco**  
model aircraft

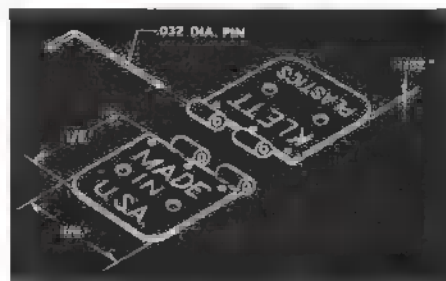
Box 543DA, Soquel, Ca. 95073  
(408) 476-4245

# No CLICK — No PLAY — No FLASH PRECISION FULL-SIZE HINGES — THE NEW RK3's Take a look at the Smoothest-Working Full-Size Hinges in the Model World

For years, expert modelers have carefully cleaned out the tiny "flash" preventing smooth operation in most full-size hinges. Now, Roy Klett has followed up his very popular RK2 small hinge with the slickest-working regular size hinge you've ever seen. The new RK3 puts an end to annoying CLICK, or play.

The RK3 also has holes and fine lines for security in gluing. Larger corner radii for easier entry into slot. And the music wire pin is removable when desired. Ask your dealer to show you the best — the new RK3 hinges. Exclusively marketed by Carl Goldberg Models.

RK3-7                      7 for \$1.25  
RK3-15                    15 for \$2.35



Carl Goldberg Models Inc.  
2845 W. Cermak Rd., Chicago, Ill. 60608  
I am sending 20¢ for a gg. Illustrated Catalog with "Recommendations in Starting in R/C." Basic Explanation of R/C Equipment and Radio Control Definitions.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

## CARL GOLDBERG MODELS INC.

2845 WEST CERMAK ROAD • CHICAGO, ILLINOIS 60608

we drop appearance points then we can drop the builder of the model rules too, just as they have done in RC. When this happens the man with the heavy pocket-book will have the inside track in the race for a good airplane. Even if all this did happen, the man with the prettiest airplane has got a psychological advantage in the judges' eyes before anybody even flies. Funny thing about humans—they are notoriously impressionable animals.

### Construction

Sweet Pea's construction is different but not difficult. Necessary materials are a large flat board and some scrap wood suitable for jig blocks. All major assemblies will be built in a jig.

All balsa, except as noted, should be the lightest available. The strength of this model comes from the structure, not hard wood. In most cases the

strength to weight ratio is higher for a light airplane.

Use sensible gluing techniques. Don't overglue, but don't go the other way either. Make the joints fit; don't depend on glue to fill the cracks. When you use epoxy, remember everything you apply stays.

The wing is a sparless structure and is designed to be planked. If you do not want a sheeted wing, take out every other rib and build a D-tube wing. (If in doubt, consult September 1972 AAM "The Hawker Typhoon.")

Begin by cutting out the rib templates—one root and two tip ribs out of 1/16" plywood. Sandwich 49 rib blanks, 25 outside and 24 inside between the templates. There are three 1/8" ribs on each side of center and one on each tip; all the other ribs are 1/16". Carve the ribs and hollow them to ap-

proximately 3/8" wide. Just before assembly, hollow the first two center ribs and the tip ribs only as much as is needed. Notch ribs in 1/4 x 1/2" leading edge and in 3/8 x 1/2" trailing edge as shown; the leading and trailing edge are notched full length. This is done with a 1/16" and then a 1/8" woodruff key cutter on a drill press. The 1/8" high notch is cut only in the center section where the 1/8" plywood center brace is located. Scrap 1/16 x 1/4" balsa is inserted into the slots to hold the ribs on center while gluing.

Cut the center section crutch out of 1/8 x 6 x 12" plywood and hollow out as shown. Epoxy the bellcrank screw brace into place, and drill the screw hole. Epoxy the leading edge and trailing edge onto the crutch, and allow to harden. When this is hard, you can begin the assembly of the jig. The leading and trailing edges are each blocked up with one-in. blocks. Nail all the blocks in their respective spots, and pin the framework to them. Starting at either end, install the ribs one at a time; cut off as much of the bevel on the leading edge as is necessary. When these are dry, sand the structure, preferably finishing the sanding with a long straight edge. If the wing is upright on the board, install your favorite control system.

Join and sand sheeting off the wing, making sure the joints are on the flat part of the airfoil. If you use four and six in. sheeting, you will have only one major joint on the wing.

The most difficult job is next. Coat the entire sheeting with Hobbypoxy Formula II glue. The trick is to leave only as much glue on the sheet as is necessary and scrape off the rest. Try to get the coating to look just a little shinier than dry. Also apply glue to the leading edge, trailing edge and the center and tip ribs. Pin down the sheeting at the trailing edge, smooth the sheet forward and pin the sheet to the leading edge. Deposit weights evenly across the sheet and let harden.

When hardened, pull the wing off

## WHAT A LOVELY PAIR!

Our "AT-6 TEXAN" is now joined with Bryce Petersen's latest high-performance stand-off scale design featured in the April '72 issue of R/C Modeler Magazine.

### FOCKE-WULF TA-152

You couldn't prove the Germans lost the war with this kit.

Wing span ..... 58"  
Wing area ..... 450 sq. in.  
Weight ..... 4 lbs.  
Engines ..... 30-45

\$38.50

After Nov. 1 — \$39.95

### AT-6 TEXAN

Wing span ..... 53"  
Wing area ..... 416 sq. in.  
Weight ..... 4 lbs.  
Engines ..... 29-40

\$34.95

After Nov. 1 — \$38.50

DEALER AND JOBBER  
INQUIRIES INVITED

**AERO PRECISION**



Both kits feature all balsa construction, full size plans including isometric drawings, fully sheeted wings, balsa cowl cut to shape, vacuum formed canopy, formed landing gear, control horns and hinges.

Don't forget our "TOUCHDOWN"—now with all balsa wing construction—still \$21.95. Please specify—48" trainer or 42" performance.

P.O. Box 152-A Tipton, Indiana 46072

# CHRISTMAS SPECIAL

Plans and helpful hints for the beginning modeler are featured. Instruction and information are stressed, but the biggest thing is FUN! The magazine is designed for the boy or girl from seven on up. Take advantage of the only model hobby magazine written for beginners.

## FATHERS and GRANDFATHERS

Here is THE magazine for  
your son or grandson !  
We have planes, cars, rock-  
ets, in every issue !

One Year  
6 BIG issues  
only

\$1.10 off newsstand prices

**\$2.50**

or

Two Years  
12 GREAT issues  
only

\$1.70 off newsstand prices

**\$5.50**

USE THE HANDY ENVELOPE TO ORDER!  
OFFER EXPIRES DECEMBER 31, 1972



*John Wright*

# Hot racing models for fun and the toughest competition



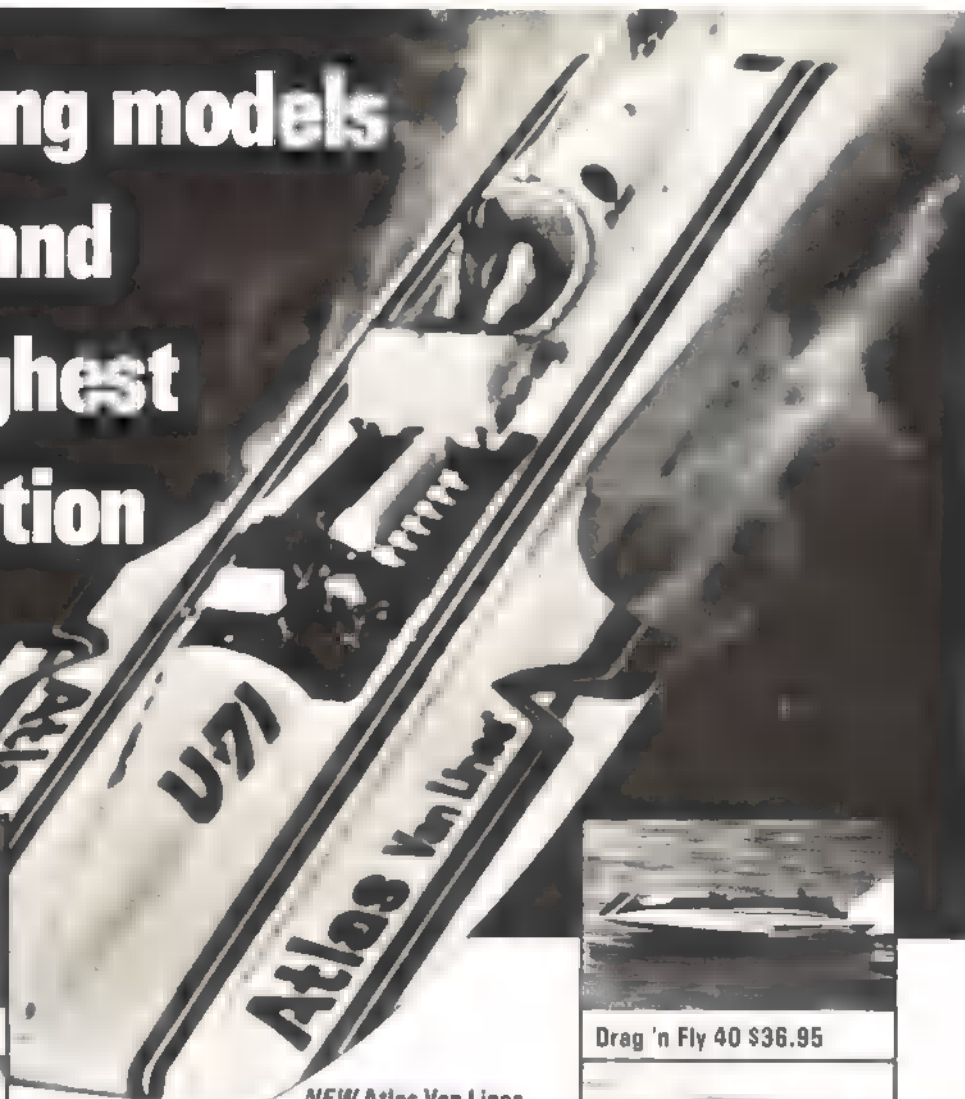
**Thriftway Too \$9.95**



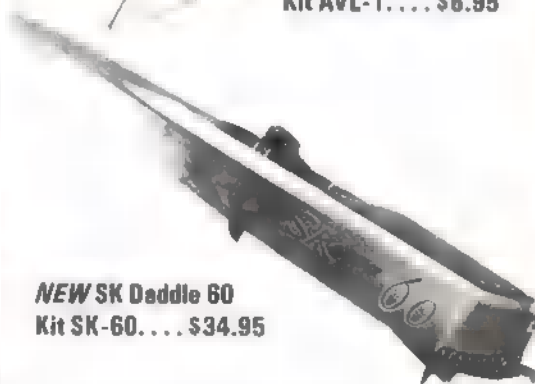
**SK Daddle 20**



**SK Daddle Jr. \$9.50**



**NEW Atlas Van Lines  
Kit AVL-1... \$6.95**



**NEW SK Daddle 60  
Kit SK-60... \$34.95**



**Drag 'n Fly 40 \$36.95**



**Drag 'n Fly 60 \$49.95**



**SK Daddle Too \$15.95**

There's lots new in the Dumas fun and competition line of boat kits this year... Atlas Van Lines, ■ 18" scale model of the unlimited hydro, driven by World Champion Bill Muncy. She's great for display, free or tether running with .049 or .09 engines. For the real RC competitor the new SK Daddle 60 features a bottom design, by Steve Muck, which provides higher straightaway speeds and faster turns. The SK 60 has hardware options for out-board rudder, water pickup and parallel drive.

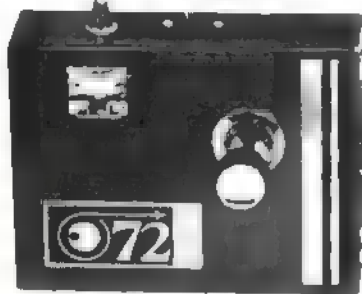
These features are now also standard on our hot SK 20 and ■ 40. If you'd rather run than build, take a long hard look at the Dumas SK 20G... This fiberglass ski boat is only \$49.95 and ■ in metal flake deck, joined to a white hull with bulkheads and motor mounts installed. The winning ways of our Drag 'n Fly's... 20-40 and 60 ■ history, and still making history. See your hobby dealer or send 25¢ to cover postage and handling for our complete catalog of boats and planes.

**dumas  
boats**

**Dumas Products, Inc., 790 S. Park Avenue, Tucson, Arizona 85716**

# Keep Flying with Orbit 1972

5- and 6-Channel Custom Systems



Specially designed for competition aircraft. Complete compatibility with Orbit receivers, servos and power packs produced since 1970.

**Transmitter** five or six channel both with standard new retract switch, gimbaled single-stick or two-stick mode I or II, minimum output one half watt, four hours continuous operation on full charge, built-in dual-center system. **Receiver** incorporates new integrated circuitry for 40% reduction in idle current drain, voltage regulator prevents failure because of dead or shorted battery cells, weight 1.80 oz.

**Servo** with monolithic chip integrated bridge circuit provides 0.5% centering, 16 millisees response time, 1% drift 0 to 150°. **PS-6IC** miniature 1.12 oz. **PS-3IC** standard 1.75 oz. **Power Supplies** are high-rate, rechargeable, nickel-cadmium batteries, receiver 500 MA square or flat pack or 225 MA flat. **Transmitter** 9.6 V 500 MA. **External Charger** for safe charge of transmitter and/or airborne batteries.

Rugged solid-state circuitry, power range, precision control, safety and flexibility is why your best investment in R/C is an Orbit system.

Write for free 1972 Orbit Catalog

First in R/C technology since 1954.



ORBIT ELECTRONICS  
17312 Gillette Ave.  
Santa Ana, California 92705  
(714) 540-1404

the board, rebuild the jig, and sand and apply sheeting as before. Completed wing shouldn't weigh over 14 oz. Install flaps and tips.

Cut fuselage sides out of 1/8" medium-soft balsa. Make a template of the airfoil off the wing, and cut out wing hole. Cut out stab hole also. Taper and drill out the motor mounts as shown on plans. Cut out all bulkheads. Glue motor mounts directly to fuselage sides—there are no doublers. This is a tried and true method for avoiding stress cracks at the wing leading edge-fuselage joint. If you insist on doublers, do not use plywood thicker than 1/32". Make them as long as the motor mounts and do not extend them past the leading edge. Be sure to have a left and right side! Epoxy two bulkheads and fuel tank to left fuselage side. Slide the sides onto the wing from each side, and epoxy the bulkheads to the right fuselage side. Glue the next two bulkheads in. Build a jig for the fuselage with the fuselage resting on its top. This will hold the fuselage steady while you align the wing. When the wing is properly aligned, epoxy it in and let it harden.

Cut the stab and elevator out of 1/2" soft sheet. Carve them to an airfoil shape. Be extremely careful to leave 3/4" each side of center of stab uncarved; it greatly facilitates construction. Bevel the center of the stab to create a 50° angle. It is possible to increase the angle to 60° or decrease it to 45° without any real difference in performance. Carve a block one in. wide to fit the inside angle of the stab. Join the stab halves, and block together with epoxy. When hard, sand the bottom of the stab until you have a flat approximately one in. wide.

Elevator horns are made of Du Bro strip aileron linkage. Position the horn wires in the elevator, and open up the bend of the wire until it is vertical to the fuselage and parallel to the wire on the opposite side. The two wires should be no more than 5/8" apart. Epoxy the horn wires and hinge the two elevators onto the stab using at least three hinge points on each side.

The pushrod is a little tricky but, when done, is about the best way to motivate the multiple control horns. Using 1/16" wire, bend the rod as follows: bend a "Z" in the wire approximately 1/4" wide; bend the wire at a right angle opposite the direction of the "Z" so the wire crosses back across its center; bend another right angle bringing the wire back towards the point you started; bend another "Z" to bring the wire back right next to the original leg.

You should end up with a 3/4" rectangular loop with the two open sides angling towards the center. Slide the Du-Bro nylon horns onto the loop with a cut-down ink pen spring between them to help keep them separated. Solder the open ends of the loop to a piece of 3/32" wire for the pushrod proper. Slide the horns onto the wire uprights on the elevators, and lock them into position with the set screw which comes with the horns.

Notice the former under the stab at the bottom of the fuselage and running to the back. Make one of these out of



AVAILABLE "NOW"  
\$11.95

ELECTRIC FUEL PUMP  
**MARK I**

UNIT OPERATES FROM 1½ VOLT TO 6 VOLTS AND UP TO 12 VOLTS WITH A MINOR FIELD MODIFICATION. THIS PUMP IS REVERSIBLE, BOTH FILLS AND EMPTIES THE FUEL TANK. WITHOUT A DOUBT THE FINEST AND MOST ADVANCED DESIGN ELECTRIC FUEL PUMP EVER AVAILABLE.

WRITE FOR DETAILS, JOBBERS AND DEALERS ARE INVITED

**SONIC-TRONICS**  
8017 CRAIG STREET  
PHILA., PENNA. 19136

Designed and Built in the United States by Sonic-Tronics Inc.

# Top NATS Winners "C" Expert 3rd CONSECUTIVE YEAR

PRO LINE RETRACTS TOO!

1st **CHIDGEY**  
Pro-Line  
1971 & 72 Nats

3rd **DON COLEMAN**  
Pro-Line  
2nd 1971 Nats

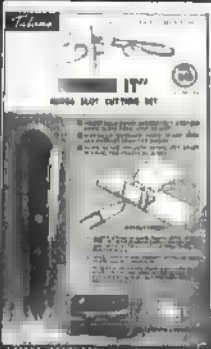
2nd **JIM WHITLEY**  
Pro-Line  
1971 FAL Team



WRITE  
FOR OUR  
NEW 1972  
CATALOG

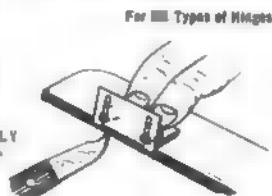
P.O. BOX 7733 • PHOENIX, ARIZONA 85011 • TELEPHONE (602) 264-3213

from **Tatone**



## "HINGE IT" HINGE SLOT CUTTING SET

- ADJUSTABLE ALUMINUM — ACCURATELY CENTERS HINGE SLOTS FROM 1/16" to 9/8"
- SPECIALLY SHAPED STAINLESS STEEL KNIFE BLADE CUTS AND ROUGES OUT — FOR HINGES
- KNIFE BLADE FOLLOWS GUIDE, NOT GRAIN IN WOOD, FOR PERFECTLY ALIGNED HINGE SLOTS



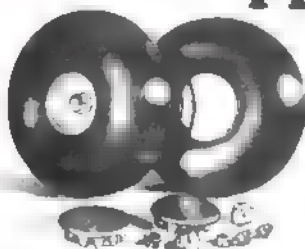
only  
**\$2.95**  
set

This has to be one of our better ideas. If cutting hinge slots bugs you, give this a try. —Guaranteed to satisfy.

**TATONE PRODUCTS**

1209 GENEVA AVE.  
SAN FRANCISCO, CA 94133

## "FLIGHT LINE" AIR WHEELS

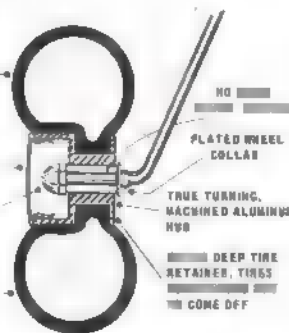


NOT SPONGE-NOT PLASTIC, BUT PURE BLACK NEOPRENE RUBBER. WILL NOT CRUMBLE, DETERIORATE OR CUT EASILY

POLISHED — HUBS CAPS HIDE AXLE — DIRTY OUT

PUSH ON RETAINER HUT

THICK WALLED, FILLED, LASTING



PLATED WHEEL COLLAR

TRUE TURNING, MACHINED ALUMINUM HUB

DEEP TIRE RETAINER, TIRING COME OFF

- LOW BOUNCE NEOPRENE
- TRUE TURNING MACHINED ALUMINUM HUBS
- POLISHED NICKEL HUB CAPS, HIDDEN AXLES
- WHEEL RETAINERS AND COLLARS INCLUDED

2" DIA. — \$2.69 pr.      2 1/2" DIA. — \$2.99 pr.  
2 1/4" DIA. — \$2.79 pr.      2 3/4" DIA. — \$3.19 pr.  
3" DIA. — \$3.39 pr.

3/8" balsa, and pull the back of the fuselage together around it and the tail post. Install the remaining bulkheads. Slide the pushrods-stab assembly into place. After the controls work freely and smoothly, epoxy the stab into place.

The top, front and entire bottom of the fuselage should be carved and hollowed out of blocks. Build up the turtle-deck with sheet balsa and then cap it. Glue the block above the stab to both the fuselage and to the block in the center of the stab. This improves the solidity of the rear fuselage.

Any of the new breed stunt engines run with good power and dependability. I used an OS MAX 35, but several other engines—notably the Testors and Fox 40s—are excellent choices.

Wheel pants are a nice luxury. The tailwheel fairing is borrowed from the full-size Sweet Pea. It looks nice but requires sacrificing the advantage of a long tailwheel. Then, you have to work for good landings. It is made of a 3/8" balsa core, cut out for the wheel. A 1/16" plywood cap on either side of the cut-out faired in with 1/16" balsa finishes the assembly except for sanding to shape.

Cheek cowl is made from one in, scrap balsa carved, hollowed and capped. These add charm and also make it easy to grab hold of the airplane.

Apply your favorite fillets. I carve mine out of balsa or use Epoxylite putty. Finish methods vary. If in doubt about finishing, consult articles written by Don Bambrick and Dave Gierke.

### Flying

My model is a little heavy at 51 oz.; shoot for 48 oz. Mine took little trimming and flies extremely well. It doesn't turn tightly as some of its contemporaries, but it turns cleaner. I flew mine on 65-ft. lines with excellent results. The plane will carry the extra weight, and it also gives you more time to think between corners.

I would enjoy hearing your comments and ideas. Send me a note in care of the editor.

### PYLON

(Continued from page 37)

than the one in which he just nosed Terry Prather out at the finish line: They were coming down the back straight ten feet apart, and Cliff got Terry on the finish by little more than the length of the airplane. Cliff's caller Dave Lane did a superb job. Cliff had to win several races starting from second or third position, which is rough, with everyone capable of flying in the 1:30's.

What happened to some of the names you'd expect to find high in the finals? Well, what makes racing fun is just exactly the incredible number of unpredictable things that can go wrong. I remember one year when Cliff Weirick went to the line and flamed out four out of five times because he had insufficient rotor clearance. This year the Hound Dog was out to get the San Fernando Valley contingent, except for Larry Leonard and Kent Nagy, to say nothing of what the Hound Dog did to

# Announcing DEE BEE's new Positive Angle Wing Joiner - For a perfect dihedral - Everytime!

(1) Wick (glue) on the plastic parts.

Easy as 1-2-3!

(2) Fill the funnel with your favorite epoxy.

(3) Cut off the funnel with a razor saw.

A strong and perfect wing is now ~~impossibly~~ easy for anyone to achieve. Designed by the DEE BEE designers especially for the DEE BEE Mustang, Piranha and Mirage '42. At your dealer's.

DEE BEE MODELS

102 SOUTH JESSUP DRIVE

CLAYTON, NEW JERSEY 07012

TELEPHONE (609) 881-0374

Watch For Grand Opening  
Indy R/C Sales, South Soon!

Seasons  
Greetings

## XCELITE

Allen Hex Type  
Driver Set  
9 Sizes - Extension Shaft  
Included  
This is a Recommended  
Xmas Gift. Save time  
installing engines and other  
Accessories \$9.95

## Sullivan fuel cell tanks

12 oz. - \$2.45  
10 oz. - \$2.45  
8 oz. - \$2.25

## Midwest Cardinal

\$21.98 Regular  
\$16.95 Special

## J & J

1/2 Midget  
Regular \$29.95  
Special \$23.95

## Xmas Stocking

Special Package X-Acto Blades	\$ .60
1 - Devcon	1.25
1 - 4-Way Socket Wrench	.95
1 - Nifty Caddie (For Glow Plugs)	.98
1 - Du-Bro Accessory Item	2.25
\$ .75 each	2.95
1 - Du-Bro Prop Balancer	.68
1 - 24" Flite-Lite Fuel Line	.79
1 - Rocket City Aileron Links	.59
1 - Safety Back Razor	1.95
Xmas Stocking	

Total Value \$13.00  
Special \$ 9.95

## ENGINES

OS Max 80 R/C  
Regular \$85.00  
Special \$59.95

## Pylon Brand Realistic Landing Gear Sets (3)

GS-1 \$9.95 - Special \$7.96  
1-Nosegear 2-Main  
1 1/4" & 2" Wheels  
GS-2 \$9.95 - Special \$7.96  
1-Nose and 2-Main Gear  
2" & 2 1/4" Wheels  
GS-3 \$10.95 - Special \$8.75  
1-Nose and 2-Main Gear  
2 1/4" & 2 3/4" Wheels

## World Engines

460 Hawk  
List \$24.98  
Special \$16.25

## A-justo-jig

Full House  
Regular \$45.00 Special \$36.36

## Buy Sealcraft Sealing Iron

\$12.95  
free  
Super \$2.98  
Value



10538 JESSUP BLVD.

INDIANAPOLIS, INDIANA

46280

HOW TO ORDER: Send Check or Money Order for prompt delivery.  
Please include ZIP CODE. Indiana residents add 7% Sales Tax.  
Sorry, no C.O.D. orders.

POSTAGE, HANDLING & INSURANCE  
\$ 00 to \$10.00 \$ 75 \$10.01 to \$20.00 \$ 1.50  
\$20.01 to \$35.00 \$ 2.00 Over \$35.00 \$ 3.00

NEW HOURS: 9:30 A.M. - 9:00 P.M. Mon. - Fri.  
Sat. 10:00 A.M. - 5:00 P.M.

517 846-0766

PROVEN  
IN  
THOUSANDS  
OF TEST  
FLIGHTS!



## G45 SPACE COMMANDER

Proportional System with  
Exclusive Integrated Circuit  
Servo Amplifier

With ■ NICKEL  
CADMIUM BATTERIES  
AND CHARGER

**\$259.95**

Sugg. List

Micro Craft offers the ultimate in dependability and economy. Our products ■ the result of continuous research, extensive field testing, incorporating the most advanced design techniques.

Send for descriptive leaflet.

DEALER INQUIRIES INVITED

Do not confuse this set with others packaged in ■ old transmitter cases. Insist on the genuine G45 Space Commander by

**MICRO-CRAFT CORP.** 314 FIFTH AVE., DEPT. AM1172 N.Y., N.Y. 10001

**The Finest is the Easiest and  
Most Dependable to use!**

# AeroGloss



*Here's why:*

**PRE-FORMULATED, READY TO USE DOPE.** Not just for convenience but for *dependability and performance.*

■ **DISTINCTIVE COLORS**—so you can build a *different* model. Hard-to-get candies and metallics are included.

**TOUCH-UPS AND ADDITIONS ■■ PROBLEM.** Leftover paint can be used again. Another—matching—jar is always available.

**INNOVATE, BLEND, CAMOUFLAGE, ADD FLUORESCENT EFFECTS.** Exclusive Aero Gloss formula comes in military flats and fluorescents, and in spray as well as brush on dope. Hot fuel proof always!

*Available at your hobby dealer! Sizes from 1 oz. to 1 gal.*

**pactra Industries, Inc.,**

6725 SUNSET BLVD., LOS ANGELES, CALIF. ■■■



the Florida, Texas and San Gabriel Valley entries.

Tommy Tusing, the brilliant young competitor from the S.G.V. R/C League, had a mid-air in his qualifying attempt, flying one of the prettiest Miss Dallas's you'll ever see, with a Super-tigre that was going with the best of Telford, Prather or Aldrich. Since only the wing was damaged, he put the wing of his back-up onto his No. 1 fuselage. The result: a disastrous trim problem that caused him to dump it full bore around the No. 3 pylon. Ed Rankin from Ft. Worth had a plug cool off in his Miss DARA and he filtered it through a fence on a downwind landing. Bob Bleadon went off rich as Croesus, the plug cooled off, and he tried to turn it downwind before he had adequate flying speed, and, of course, snapped it in. Bob Smith, still in my opinion the best bet to win any given race entered, had something go crazy in his radio in his first heat, or there was interference in the air and his plane snapped on take-off. (One has to wonder. There were too many of these strange failings, and I think there is no doubt that Smith himself was innocent of fault.) Chuck Smith, who finished a brilliant third in FAI Pylon, was also in great shape to place high in Formula 1 when he landed his Miss DARA into the landing lights just beyond the No. 2 pylon. Jack Fehling, one of the fast Florida group, had ■ wire come loose on his starting battery when he was on the line for his third attempt. And a lot of guys who ■ capable of beating 1:40.0 almost

## FOR THE ULTIMATE IN SCALE THINK AEROTEC

German WW I Fighter

### ALBATROS D-5A

2" to 1' Scale—58-1/4" Span—.60 Disp.

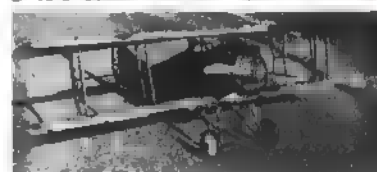


A Custom Crafted Kit ..... only \$89.95

French WW I Fighter

### SPAD—XIII

2" to 1' Scale—53-7/16" Span—.60 Disp.



A Custom Crafted Kit ..... only \$69.95

Plans only.	w/Rib ■ Formers
Albatros D-5A . . . . . \$9.95	\$31.95
SPAD-XIII . . . . . 9.95	29.95
Fokker DR-1 . . . . . 8.95	29.95
Eindecker . . . . . 8.95	27.95
Boeing P26A . . . . . 9.95	31.95

All above 2" to 1' Scale

DR 1 Triplane 3" to 1' Scale Plans. . . . . \$14.95

Special engine & 3 inch accessories available—send for catalog.

■ wood ARF. . . . . only \$59.95

**AEROTEC MODEL ENGINEERING, INC.**

116, Lindendale, N.Y. 10540  
(Dealer inquiries invited)

any day in the week just somehow couldn't put it together: Pete Reed, Joe Martin, Whit Stockwell, Ted White, Charley Gray, Don Singer, Bob Bleaden, Garry Korpi. And maybe twenty others of the sixty-two who failed to qualify could almost as easily have made it as not. It's hard to figure sometimes.

One wonders about the whole qualifying system. Why couldn't we fly heat races all day Monday and Tuesday? At Bakersfield we flew eight complete rounds in two days with 95 entries. With 82 entries, I'll bet we could have done ten rounds and still had Friday afternoon for five complete rounds of the 35 or so FAI entries, and Saturday afternoon for five rounds of the twenty who were at the top of Formula I after the racing Monday and Tuesday. I don't think one freak time should determine your opportunity to fly in the finals, but rather your heat point accumulation after eight or ten rounds. I also don't trust those stop watches, despite the fact that we had the best group of counters, flagmen, starters and desk helpers ever at one contest. There was one instance when three planes finished within ten feet of each other: two of them were timed at 1:37 and 1:38, and both qualified, and the third was timed at 1:43 and failed to qualify. No way!

Please understand that I do not mean this as criticism of any of the workers, most of whom I number, hopefully, among my friends. I mean it as criticism of the system—a bad one that has been thrown out at every other major event except the Nats. And it cannot be claimed that it is retained at the

**TRY US . . .**  
When in Cleveland, Have Fun.  
Visit Us . . . You'll Be Glad You Did!  
**LARGE STOCK FROM THE WORLD OVER**  
Airplanes, Ships, Railroads, Cars, Rockets, Plastic  
Kits, Accessories, Supplies, Books, Tools.  
**78 Page Catalog \$1.00**  
216-749-4750

**NATIONAL HOBBY**  
5238 Ridge Rd. Cleveland, OH 44129

### GOV'T. SURPLUS MODEL 4 NICKEL-CADMIUM BATTERY, 1.2 VOLTS

Rechargeable thousands of times



Sintered-plate alkaline storage battery displays flat voltage curve during discharge, has high discharge rate (up to 50 amps), holds charge for a long period of time. Spillproof, may be used in any position. Approx. 4 ampere-hour capacity. Dimensions: 1 1/2" high, 2" wide, 1/2" thick. Approx. weight: 1 1/2 oz. Uses potassium hydroxide (30% electrolyte).

Price \$2.50 each, postpaid

### MODEL 7 N/C BATTERY, 1.2 VOLTS

Same general characteristics as battery above, but with 7 ampere-hour capacity. Dimensions: 4 1/2" high, 3/4" thick. Approx. weight: 9 oz.

Price \$3.50 each, postpaid

**C & H SALES CO.**

1400 Broadway • Phone: 381-4925  
91107

# The Hobby Market

"Your One Stop Supplier for the Competitive Flyer."

**CONTROL LINE, FLIGHT STREAK, RING MASTER, BUSTER, SHOESTRING, LUCKY SPORT, ANY 3/\$16.50. MIDWEST, ME-109, P-51, P-63, \$9.00 EA. MISS BEHAVE, NOB-LER, AKROBAT, DOLPHIN, \$12.00 EA. DOUBLE VOO DOO, \$6.60 EA. OR 5/\$31.50. DOUBLE DEMON, \$5.30 EA. 5/\$25.50. VAMPIRE, \$5.40 OR 5/\$25.75. MOTORS: FOX 25, \$9.75, .35, \$12.00, .36, \$11.00. K & B SERIES 71, .40 OR FR, \$24.00. RC: BIG FUN FLY, \$39.50; SUPER LUCKY FLY, \$49.95; UGLY STICK, \$39.50. KADS, \$38.50; ZLIN AKROBAT, \$31.50; TOP FLIGHT P-51 MUSTANG, \$31.50. MOTORS: FOX 60 EAGLE, \$35.00; ENYA 60 111, \$43.00; VECO .61, \$43.00; WEBRA .61, \$60.00; FOX RC BLOW PLUGS \$7.95 PER CARD. SEND CHECK OR MONEY ORDER TO "THE HOBBY MARKET". SORRY NO COD'S. ADD .30 CENTS FOR INSURANCE. TEXAS RESIDENTS ADD SALES TAX. PHONE 817/731-3174. AFTER 9:00 P.M.**

P. O. BOX 2172

FORT WORTH, TEXAS 76101



America's Easiest Flying Low Wing-A.R.F.

## JOHNNIE CASBURN'S LUCKY FLY

**Sport Lucky Fly: 11 sq. in., tapered wing. \$59.95**

**Super Lucky Fly: 650 sq. in., tapered wing pattern plane. \$59.95**

**Little Super Lucky Fly: 55 sq. in., tapered wing. \$57.95**

Jig built balsa fuselage, only requires gluing on ready made top back. Wings made, covered with pressed polished vinyl and ready to join. Formed landing gears. Landing gear mounts installed. Micarta motor mount with 3 degrees right thrust built in. Easy to build and fly . . . great fun to fly!

Telephone: (817) 457-5511  
(817) 451-2696

**JOHNNIE CASBURN**

**MANUFACTURING CO.**

3821 East Rosedale Ft. Worth, Tex. 76112

At all leading hobby shops — or order direct. Texas residents add 5% sales tax.



for the  
faster, easier,  
more fun  
way to model...

**pro-foam**

**pro-foam** . . . rigid polyurethane pro-foam . . . used by professionals . . . available now for the hobbyist . . . try it . . . for your largest project or smallest detail . . . a complete model or accessory . . .



**1. cut it . . .**  
pro-foam cuts easily with a knife or saw . . .



**2. sand it . . .**  
pro-foam sands and shapes quickly . . . eliminates hours of tedious construction time . . .



**3. glue it . . .**  
any popular glue is compatible with pro-foam . . . solvent, fits, glues, cures, other's, epoxy . . .



**4. dope it . . .**  
Apply your favorite covering and finish directly to pro-foam . . . glues, with open, tissue, fiber glass . . .



**5. cover it . . .**  
pro-foam is lightweight and heat resistant . . . ideal for heat shrink covering . . .

STOCK SIZES		#/PIECE	#/PIECE	#/PIECE	
3 x 4 x 12	.90	3 x 4 x 24	1.80	3 x 4 x 36	2.70
1 x 12 x 12	.90	1 x 12 x 24	1.80	1 x 12 x 36	2.70
2 x 12 x 12	1.80	2 x 12 x 24	3.60	2 x 12 x 36	5.40
6 x 6 x 12	2.70	6 x 6 x 24	5.40	6 x 6 x 36	8.10
6 x 12 x 12	5.40	6 x 12 x 24	10.80	6 x 12 x 36	16.20

If no dealer available . . . order direct . . . minimum order \$10.00 plus 10% shipping charge

50¢ for sample and information

MODEL 1119 COMPANY 1119 WAUKESHA ILLINOIS 60085



## OUNCE & GRAM SCALE

**\$3.50**

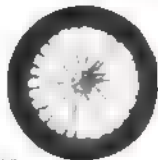
Measure both ounces & grams. Just the thing for weighing out those wings, stabs, rubber motors & small R/C units. Great for weighing balsa wood. 9 Oz. or 250 Grams Capacity.

## SCALE SPOKED WHEELS

### ■ SIZES

1/2" - 3/8" - 3/4" - 7/8"  
1" - 1 1/8" - 1 1/4" - 1 3/8" - 1 1/2"

At last a light and strong scale spoked wheel for both indoor and outdoor rubber scale models as well as light gas jobs. Each wheel will support 3 lbs. static pressure yet weighs less than 1 gram. Made of silk thread and balsa wood with teflon bearings.



**\$3.85**  
PR.



## KOSMIC

K/15 Glow w/Tuned Pipe	\$32.95
K/15 Glow FAI	\$29.95
K/15 Glow Marine w/Tuned Pipe	\$36.50
K/15 Diesel	\$29.95
Marine Gear Box	\$16.95
Spare parts in stock.	

## HAND LAUNCH GLIDER KITS

M&P "Flash"	17" Span	\$1.98
M&P "U.S. Kid"	18" Span	\$1.98
M&P "Polly"	18" Span	\$1.98
M&P "Bo-Weevil"	17" Span	\$1.98
M&P "Sweepette"	19" Span	\$2.25
M&P "Mini-Flash"	11 1/2" Span	\$1.39
4 K's "Lil Eaglet"	14" Span	\$1.25
4 K's "Eaglet"	18" Span	\$1.50
Sig "Flip"	14" Span	.79
Sig "Pigeon"	12" Span	.69
Jasco "G-12"	12" Span	.79
Jasco "G-24"	24" Span	\$2.25
Jetco "Thermic B"	20" Span	.98

## FREE FLIGHT RUBBER KITS

Jasco "X-12"	12" Span	\$ .98
Jasco "X-16"	18" Span	\$1.45
Tern Aero "Starduster"	16 1/2" Span	\$1.75
Tern Aero "Gone Goose"	17" Span	\$1.50
Tern Aero "Tiger Moth"	20" Span	\$2.50
M'West "Gollywock"	32" Span	\$4.95

Add 50¢ for postage. \$2.00 Deposit on C.O.D., Closeout List 25¢

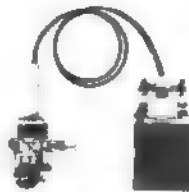
AMERICAN RD  
RESS

TELEPHONE 283-6446 area code 7

## 7 AMP STARTING CELL

ONLY  
**\$5.95**

KOH  
PELLETS  
50¢



Our regular \$4.95 7 AMP. Nickel-Cad starting battery plus the new Dubro "Kwik-Glow" cord set... \$2.00.

\$6.95 value ONLY \$5.95



■ Ch. Factory Assembled \$219.50  
■ Ch. Semi-Kit \$179.50  
4 Ch. Full Kit \$169.50

## MICRO-MODELS SCALE OLD-TIMER (PRE-1942) FREE FLIGHT KITS .024-.049 POWER

These are scaled of proven classic designs with full size detailed plans, select balsa, pre-cut (not die cut) parts tissue. Ideal for R/C, using "Ace R, O" package.

MM1. 1941 "Request"	30" Span	\$5.95
MM2. 1940 "Mercury"	36" Span	6.95
MM3. 1940 "Clipper"	36" Span	7.95
MM4. 1940 "Ranger"	30 1/2" Span	7.95
MM5. 1938 "Twin Cyclone"	35" Span	5.95
MM6. 1937 "Cavalier"	36" Span	7.95
■ 1935 "Miss America"	36" Span	7.95

FF 8. 1/2 A "Buzzard Bombshell"	6.50
FF 11. B-C "Buzzard Bombshell"	22.95
FF10. Austin IGN Timer (Sm. Med. Lg.)	Ea. 2.25
FF11. Smith IGN Condensers	Ea. .50
FF12. Hi-Tension Leads	Ea. .25
FF13. Ignition Coils (as available)	4.95
FF14. D-T Timer	
FF15. D-T Fuse	.35

## 3 LINE BELL CRANK AND HANDLE



Combines motor speed control with elevator on U-Control models.

HANDLE.....\$6.95  
B'CRANK-UP. OR INV. \$3.50

**Stanton**  
**Hobby Shop Inc.**

4734 NORTH HAWTHORNE AVENUE  
CHICAGO, ILL. 60631

Nats because of the numbers: there have been other Formula I races as big and bigger, and the addition of the puny FAI entry adds no problem because it could easily be flown off in one afternoon without any qualifying. In fact, I no longer have much sympathy for FAI Pylon as an event at all, and would like to try to combine all the racing events (except events like Quarter Midget that are explicitly intended to bring newcomers into racing) into the one clearly defined event we have—Formula I. There are too many loopholes and indeterminacies in the FAI rules—consider the Telford/Violet innovations and some of the monkeyshines that take place with FAI engines. I think the FAI influence has also been extremely damaging to our U.S. Pattern event, where everything comes down to nit-picking details, as well as to racing.

I think a special trophy for outstanding novice performance should be awarded to Kent Nagy. Would you believe that he placed six in Formula I in the fifth race he has ever entered, and of course his first Nats? Another newcomer to the Nats was Mike Barna, whose 1:40.0 was the 20th qualifying time but whose luck ran out in his first heat of the finals with a crash induced by a servo failure.

I believe the most impressive group, geographically, was the Southern contingent: Harold Coleson was 3rd in Formula I, D.C. May 4th, Tommy Baker 8th and Charles Funderbunk 12th. Southern California placed a larger number in the finals, but they entered quite a few more, too. They had Weirick 1st, Leonard 2nd, Prather 5th, Nagy 6th, Spreng 7th, Hotelling 9th, McCan 11th, and the two Smiths and Bertken on down the line. Stockwall was off the qualifying pace by 3/10 of a second, Joe Martin by 4/10, and others like Stafford, Upton, Tusing, and Korpi (N. Cal.) were in close behind them. And speaking of impressive novice performances, I must mention Ed Hotelling, who qualified in both the Formula I and the Pattern events at his first Nats—it was just a year ago that he won the Novice race in Southern California.

We've spoken of engines, now a word about airplanes. In '69, '70, '71 and '72 the winner has been the reliable low-wing Minnow, three times a stock Stafford Minnow and once the Stafford fuselage with a Smith laminar wing. Now that is quite a record! It doesn't prove it is the best airplane around. It still hasn't been able to set the times that Smith and Leonard have turned with the Miss DARA, but it's got to be one of the best flying, fastest, best landing and cleanest airplanes in the competition.

Speaking of good-looking airplanes, it was Terry Prather's exceptional white Minnow with orange trim that took the top starting honors. Terry has few rivets, no control surface striping, no gimmicks—just superb finish and workmanship, and excellent scale outline. Another detail: the top six in the handicapping were basic white, some with red trim, some with blue. Somehow judges prefer basic white airplanes. I find that

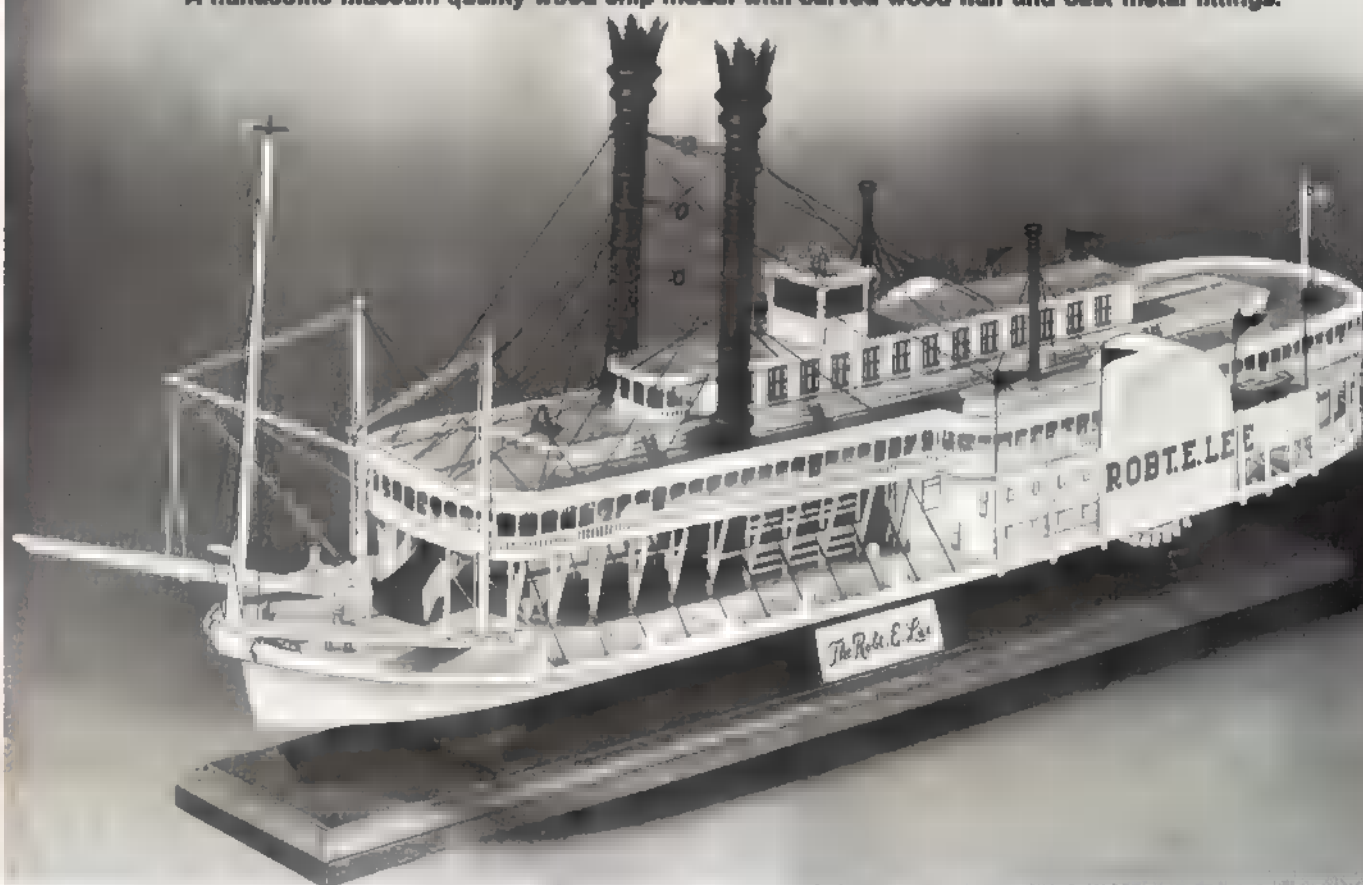
(Continued on page 102)

NEW from SCIENTIFIC

# ROBERT E. LEE

MISSISSIPPI STEAMBOAT

A handsome museum quality wood ship model with carved wood hull and cast metal fittings.



## "NO MORE WAITIN' FOR THE ROBERT E. LEE" . . . IT'S HERE!

The most famous sidewheeler of them all is in a great new kit with all the trimmin's to make a scale replica. Months of research with material furnished by the Ohio Historical Society and the Louisiana State Museum make it authentic in every detail. And, anyone, even if they've never built a model before, can easily assemble it, using the easy-to-follow detailed instructions. Back in 1870, the Robert E. Lee was the fastest steamboat on the Mississippi. Now, it's a beautiful wood model Mark Twain would have been proud to own!

Our deluxe kit contains ■ finest materials available including:

- Pre-carved wood hull, all precision cast metal fittings including anchors, stairway, paddle wheels, ladders, lifeboats, chocks, etc.
- Pre-shaped Smoke Stacks
- Formed Deck Railing and pre-ruled scale Decking
- Colorful Decals and Pennant materials
- Mounting pedestals and beveled wood Display Stand
- Handsome metal nameplate
- Complete step-by-step instructions that make building easy even for the beginner.

KIT NO. 181

24½" Long, 6" Wide, 9" High

**\$32<sup>95</sup>**

Send for our big colorful catalog . . 25¢

■ Your Dealer. If kits ■ not available ■ dealer, you may order direct from factory adding \$1.00 for postage and handling. Outside U.S.A. ■ \$2.00



**SCIENTIFIC MODELS, INC.**

340CC Snyder Ave., Berkeley Heights, N.J. 07922

Carl Wheelley

## MODEL AVIATION

Official magazine

# A.M.A. NEWS



Academy of Model Aeronautics • 1515 Fifteenth Street N.W., Washington, D.C. 20005

INTERESTED ■ JOINING A.M.A.? Over 39,000 ■ in 1971. Details may be had by requesting **FREE BROCHURE** from above address.

## Spectacular AMA - AAM Nats Coverage Begins Page 20

The regular "AMA News" section may look as if it has been short-changed this month, but it really isn't so. Instead AMA and AAM have teamed up to improve the reporting and graphic presentation of the highlights and official results of the 1972 National Model Airplane Championships.

Beginning on page 20 you'll find the usual AMA authors plus AAM's "Where the Action Is" columnists. In this manner the reader will be able to learn about all aspects of the Nats with improved continuity. It is a team effort designed to pay dividends in increased reading pleasure.



Two-time CL Stunt World Champion ■ Werwage is carried on Teammates' shoulders in celebration of Bill's repeat win. Basic results of the CL World Champs in Finland were reported in the October "AMA News Extra", ■■■ 111.

## Scale World Championships

### U.S. TEAMS 1ST IN RC, 4TH ■ CL

Individual U.S. placing in the Second FAI Scale Models World Championships at Toulouse, France, August 2-6 was as follows.

Radio Control: Maxey Hester, Ryan STA Special, 3rd; John Roth, Volksplane, 5th; Bob Wischer, Emcraude, 7th.

Control Line: Mike Stott, Meyers 145, 4th; Mal Meador, Spitfire, 7th; Ralph Burnstine, Douglas A-20, 14th.

Heinz Simon, Germany, was the individual RC Scale World Champion, entering and fly-

ing very impressively ■ German ME 163 rocket fighter. His procedure was to tow the model to the takeoff point by means of an RC truck, just as was done with the prototype, then take off from a dolly.

Jerzy Ostrowski and Lech Podgorski, both of Poland, were first and second in Control Line Scale, which placed this country in good stead ■ also be the CL Team World Champion. Ostrowski's aircraft was the twin-engined DH Hornet.

## New Dues Structure

The AMA Executive Council, at its July 26, 1972 meeting, approved the following dues structure for 1973 AMA members:

Open class (19 or over as of July 1, 1973)—\$15.00, including subscription to American Aircraft Modeler Magazine.

Junior or Senior classes (not 19 by July 1, 1973) \$3.00 without American Aircraft Modeler Magazine, \$7.50 with the magazine.

Membership renewal notices will be in the mail during October, must be returned with dues payment by December 15, to avoid missing any magazine issues for 1973.

New memberships may be applied for now—should be received by AMA by December 15 for full 1973 service including magazine subscription, liability insurance, and AMA competition eligibility.

## U.S. Wins Indoor WC and RC Pylon Int'l

Pete Andrews, the first man to clock 30 minutes with an Indoor model, has won the 1972 Indoor World Championships with a two-flight total of 71:09. Czechoslovakians took 2nd, 3rd and 4th and also the team prize. U.S.A.'ers Cannizzo and Romak were 5th and 7th to earn 2nd team place.

Bob Violett, piloting the Telford/Violett entry, won the RC Pylon Race International Contest with 32 race points and best meet time of 1:40.5. Philip Greeno, Gt. Britain, was 2nd with 28 points, and Jeff Bertken, U.S., was 3rd 23 points.

The two contests were in England, August 25-28; Indoor was flown at Cardington while the RC Pylon Race was at Cranfield.



CONTEST												
	1	2	3	4								
7	8	9										13
14	15			18	19	20						
				24	25	26	27					
29	30	31										

CALENDAR

## Official Sanctioned Contests of the Academy of Model Aeronautics

SEPT. 30-OCT. 1-E. GRANBY, CONN. (AA) N.C.R.C.C. Annual RC Pattern Meet. Site: E. Granby. G. Sawm CD, 11 Audrey Ln., Enfield, Conn. 06082. Sponsor: Northern Connecticut RC Club.

SEPT. 30-OCT. 1-ELMIRA, N.Y. (A) National RC Soaring Contest. Site: Harris Hill. R. Miller CD, 22 Kings Cir., Corning, N.Y. 14830. Sponsor: The Flying Sparks, Inc.

SEPT. 30-OCT. 1-JAMESTOWN, N.Y. (AA) United Pylon Racing Circuit RC Championships. Site: Hartfield. W. Johnson CD, 153 Hallock St., Jamestown, N.Y. 14701.

SEPT. 30-OCT. 1-MONROE, N.C. (AA) N. Carolina State RC Meet. Site: Monroe. D. Pearce CD, 1005 Ainsworth Ct., Greensboro, N.C. 27410.

OCT. 1-MENTOR, OHIO Quarter Midget World Championships. Site: Tyler Blvd. R. Penko CD, 21151 Westport Ave., Euclid, Ohio 44094. Sponsor: Mentor Area RC Society.

OCT. 1-VALLEY PARK, MO. (A) United States Model Aerobatic CL Championships. Site: Buder Park. T. Niebuhr CD, 1170 S. Florissant Rd., Florissant, Mo. 63031. Sponsor: St. Louis Yellow Jackets.

OCT. 1-LINCOLN PARK, N.J. (A) 14th Annual CL Model Air Show. Site: G.S.C.B. Club Field. K. Purzycki CD, 273 Marcella Rd., Lake Parsippany, N.J. 07054. Sponsor: Garden State Circle Burners Inc.

OCT. 1-LAKEHURST, N.J. (AA) Central Jersey RC Club 1972 Eastern States RC Championships. Site: Lakehurst Naval Air Station. L. Shulman CD, 1114 Raritan Rd., Clark, N.J. 07066. Sponsor: Central Jersey RC Club.

OCT. 1-DAYTON, OHIO (AA) Dayton All 1/2A & A CL Contest. Site: Municipal Flying Field. K. Trostle CD, 6301 Leawood Dr., Dayton, Ohio 45424. Sponsor: Dayton Buzzin' Buzzards.

OCT. 1-ALBANY, ORE. (A) 3rd Annual Silence Please FF Meet (Cat. I). Site: Parker Field. B. Stalick CD, 1120 Shady Ln., Albany, Ore. 97321. Sponsor: Willamette Modelers Club, Inc.

OCT. 1-OKLAHOMA CITY, OKLA. (AA) Controliners Fall CL Rally. Site: 5300 N. Broadway Ext. M. McGee CD, 904 N. Harris, Apt. D, Oklahoma City, Okla. 73107. Sponsor: Oklahoma City Controliners.

OCT. 1-RICHMOND, VA. (AA) Brainbusters Fall FF Meet (Cat. II). Site: Curles Neck Dairy Farm. B. Champagne CD, P.O. Box 6213, Newport News, Va. 23606. Sponsor: Brainbusters Model Club.

OCT. 1-MESQUITE, TEX. (A) Golden Triangle Annual A-B Pattern & Scale RC Meet. Site: Samuels Park East. B. O'Steen CD, 1506 Marie Terr., Arlington, Tex. 76010. Sponsor: Golden Triangle RC Club.

OCT. 1-COUNCIL BLUFFS, IOWA (A) Cobras RC Pylon Meet. Site: Cobra Field. P. Edmunds CD, 4729 Easkine, Apt. No. 4, Omaha, Neb. 68100. Sponsor: Cobras Radio Control Club.

OCT. 1-CHAGRIN FALLS, OHIO (A) Third Annual Midwest All-Scale FF Meet. Site: Savage Road. V. Didelot CD, 4410 Lorna Ln., Erie, Penna. 16506. Sponsor: Erie Model Aircraft Assn.

OCT. 1-BALTIMORE, MD. (A) Flite Streaks CL Stunt Contest. Site: Skyview Park.

B. Trent CD, 300 Lambson Ct., Baltimore, Md. 21220. Sponsor: Flite Streaks.

OCT. 7-9-FISKDALE, MASS. (AA) 7th Annual N.E. Hydro Radioplane Championships. Site: Brimfield Dam. J. Ross CD, 19 Sterling Dr., Dover, Mass. 02030. Sponsor: New England RC Modelers, Inc.

OCT. 7-8-DALLAS, TEX. (AAA) Model Aircraft Club of Dallas Fall CL Championships. Site: Hobby Park. M. Wheeler CD, 2400 Lovell Dr., Mesquite, Tex. 75149. Sponsor: Model Aircraft Club of Dallas.

OCT. 7-8-ALBUQUERQUE, N.M. (AA) SWAT 8th Annual FF (Cat. I) Contest. Site: Boys' Academy. J. Bicknell CD, 12329 Princeton Dr., Albuquerque, N.M. 87112. Sponsor: South West Aero Team.

OCT. 7-8-EL MONTE, CALIF. (A) San Gabriel Annual RC Pattern Contest. Site: S. El Monte. J. Garabedian CD, 909 N. 3rd St., Montebello, Calif. 90640. Sponsor: San Gabriel Valley RC Club.

OCT. 7-8-VAN NUYS, CALIF. (A) N.A.R. Flightmasters 23rd Annual FF Scale Contest. Site: Van Nuys Basin. J. Kusik CD, 9172 Wilhelms Cir., Huntington Bch., Calif. 92646. Sponsor: N.A.R. Flightmasters.

OCT. 7-8-SPOKANE, WASH. (A) Octoberfest Fun-Fly & RC Pattern. Site: Barons Field. C. Martin CD, 2906 N. 5th St., Coeur d'Alene, Idaho 83814. Sponsor: Barons Model Club.

OCT. 7-8-WALLKILL, N.Y. (AA) Sky-Scrapers International FF Challenge. Site: Galeville Army A.F. W. Dunwoody CD, 111 Ft. Salonga Rd., Northport, N.Y. 11768. Sponsor: Sky-Scrapers.

OCT. 8-SOUTHFIELD, MICH. (A) Cloudbusters Annual FF Scale Meet. Site: Southfield. R. Duenz CD, 14645 Stahelin, Detroit, Mich. 48223.

OCT. 8-LINCOLN PARK, N.J. (AA) 14th Annual CL Model Air Show-2nd Half. Site: G.S.C.B. Club Field. J. Miske, Jr. CD, 415 Clifton Blvd., Clifton, N.J. 07013. Sponsor: Garden State Circle Burners, Inc.

OCT. 8-HUNTSVILLE, ALA. (AA) MACH Old Timer and FAI FF Contest. Site: Huntsville Airport. L. Baker, Jr. CD, 701 Esslinger, Huntsville, Ala. 35802. Sponsor: Model Airplane Club of Huntsville.

OCT. 8-DETROIT, MICH. (AA) Fall CL Internationals. Site: Rouge Park. J. Lucas CD, 20463 Ardmore, Detroit, Mich. 48235. Sponsor: Strathmoor Model Club.

OCT. 14-15-LAS VEGAS, NEV. (AA) L.V.R.C. Annual RC Meet. Site: Tule Springs Park. R. Mearns CD, 5412 Holmby Ave., Las Vegas, Nev. 89102.

OCT. 14-15-NEW ORLEANS, LA. (AA) 11th Annual Crescent City RC Meet. Site: Club Flying Field. A. Wiltz CD, 3231 47th St., Metairie, La. 70001.

OCT. 15-FORTH WORTH, TEX. (AA) The Fort Worth Planesman Fall Annual FF Meet. Site: To Be Determined. W. McCormick CD, 4612 Pleasant, Ft. Worth, Tex. 76115. Sponsor: The Fort Worth Planesman.

OCT. 15-HUNTSVILLE, ALA. (A) RC/RC Soaring Meet. Site: Old Airport. C. Schofield CD, 2709 Briarwood Dr., Huntsville, Ala. 35801. Sponsor: Rocket City Radio Controllers, Inc.

OCT. 15-FT. LEWIS, WASH. (AA) 3rd Annual FF Power Bash (Cat. I). Site: Harts Lake Prairie. H. Smith CD, 1417 N.W. 191st St., Seattle, Wash. 98177. Sponsor: Boeing Charter Hawks.

OCT. 15-WATERMILL, N.Y. Suffolk Falcon's Annual Water Mill Meet. Site: Watermill. R. Caplan CD, 21 Oneida Ave., Centereach, N.Y. 11720. Sponsor: Suffolk Falcons.

OCT. 15-SALEM, OHIO (A) RC Short Circuits Club RC Soaring Contest. Site: Quaker City Drag Strip. J. Marshall CD, RD No. 5, Lisbon, Ohio 44432. Sponsor: RC Short Circuits Club.

OCT. 15-LUMBERTON, N.C. Fort Bragg Model Club Fun-Fly. Site: Lumberlon. L. Quarterman CD, 511 Anson Dr., Fayetteville, N.C. 28301. Sponsor: Fort Bragg Model Airplane Club.

OCT. 15-DURHAM, CONN. (A) Flying Aces Club Fall Meet. Site: Durham Meadows. D. Stott CD, 66 Bankside St., Bridgeport, Conn. 06606. Sponsor: Flying Aces Club.

OCT. 15-NASHVILLE, TENN. (A) Fall 1/4 Midget Rally. Site: Nashville. B. Reuther CD, 216 Vaughns Gap Rd., Nashville, Tenn.

37205. Sponsor: Middle Tennessee RC Society.

OCT. 21-22-MONROE, N.C. (AA) MRCC RC Air Races IV. Site: Monroe RC Club. V. Helms CD, 800 Tyvola Rd., Charlotte, N.C. 28210. Sponsor: Monroe RC Club.

OCT. 21-22-HOMESTEAD, FLA. (A) AMPS RC 2nd Annual Fly-In. Site: AMPS Field. R. Hendricks CD, 11742 SW 176 Terr., Miami, Fla. 33157. Sponsor: Aero-Modelers of Perrine.

OCT. 21-22-VENTURA, CALIF. (AA) Ventura County Comets RC Pattern Contest. Site: Ventura. R. Lake CD, 1033 Red Oak Pl., Camarillo, Calif. 93010. Sponsor: Ventura County Comets.

OCT. 21-22-ABILENE, TEX. (A) Abilene RC Pattern Fly. Site: Seabee Park-Ft. Phantom Lake. R. Howard CD, 4235 N. First St., Abilene, Tex. 79603. Sponsor: Abilene RC Society.

OCT. 22-BRIDGewater, MASS. Fun-Fly. Site: Bridgewater. J. Ennis CD, 165 Gratton St., Brockton, Mass. 02401. Sponsor: South Shore RC Club.

OCT. 28-29-OKLAHOMA CITY, OKLA. Oklahoma Model & Hobby Fair. Site: Oklahoma State Fair Grounds. D. Armor CD, 7308 N. Western, Duncan, Okla. 73116. Sponsor: TORKS.

OCT. 29-FRESNO, CALIF. (A) Fresno Monthly FF Meet (Cat. I). Site: Near Kerman. F. Ginder, Jr. CD, 5740 E. Ashlan, Fresno, Calif. 93727. Sponsor: Fresno Gas Model Club.

OCT. 29-VALKARIA, FLA. (A) Florida Miniature Pylon RC Races. Site: Valkaria. W. Schoonard CD, 2080 Sharon Dr., Winter Park, Fla. 32789. Sponsor: R.C.A.C.F.

NOV. 4-5-EL MONTE, CALIF. (A) S. Calif. RC Air Races. Site: S. El Monte. J. Garabedian CD, 909 N. 3rd St., Montebello, Calif. 90640. Sponsor: San Gabriel Valley RC Club.

NOV. 4-5-RALEIGH, N.C. (A) RCNC Anniversary RC Meet. Site: Raleigh. D. Pearce CD, 1005 Ainsworth Ct., Greensboro, N.C. 27410.

NOV. 4-5-MESQUITE, TEX. (AA) DRC Club Fall RC Ball. Site: Mesquite. L. Hyde CD, 607 Dublin, Richardson, Tex. 75080. Sponsor: Dallas RC Club.

NOV. 12-SACRAMENTO, CALIF. (A) 12th Annual Stockton Old Timers Contest. Site: Weagell Field. R. Douglas CD, 5303 Calderwood Ln., San Jose, Calif. 95118. Sponsor: Oakland Cloud Dusters.

NOV. 18-19-LOS ALAMITOS, CALIF. (AA) All Speed Annual CL Meet. Site: Los Alamitos N.A.S. B. Wisniewski, CD, 4261 Petaluma Ave., Lakewood, Calif. 90713. Sponsor: Speed Flying Anyone.

NOV. 19-EL SINORE, CALIF. (A) "Mini-FAI Champs" Site: Lake Elsinore. M. Keville CD, 5407 Pimenta Ave., Lakewood, Calif. 90712. Sponsor: Thermal Thumbers.

NOV. 19-TAFT, CALIF. (A) SCAMPS Old Ruler & 30 sec. Antique Meet. Site: Taft. G. Wallock CD, 220 LeRoy Ave., Arcadia, Calif. 91006. Sponsor: SCAMPS.

NOV. 24-26-TUCSON, ARIZ. (AA) Winter RC Nationals. Site: Marana Air Park. R. Angus CD, 6640 N. Columbus, Tucson, Ariz. 85718. Sponsor: Tucson RC Club.

NOV. 26-FRESNO, CALIF. (A) Fresno Monthly FF Meet (Cat. I). Site: Near Kerman. F. Ginder, Jr. CD, 5740 E. Ashlan, Fresno, Calif. 93727. Sponsor: Fresno Gas Model Club.

NOV. 26-VAN NUYS, CALIF. Northrop's 6th Annual "Flying Wing" Contest. Site: Van Nuys Basin. C. Hatrak CD, 3825 W. 144th St., Hawthorne, Calif. 90250. Sponsor: Northrop Model Aircrafters.

NOV. 26-SHARPES, FLA. Spaceport RC's RC Scale Meet. Site: Sharpes. G. Jordan CD, P.O. Box 3331, Cocoa, Fla. 32922. Sponsor: Spaceport RC's, Inc.

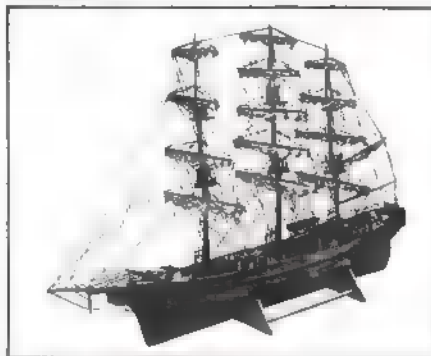
## AMA OFFICER DIRECTORY

The most recent complete directory was published in the August AAM, p. 103.

# SHIP MODELS

■ wood, rib and plank kits

The finest ship models available, these two kits include EVERYTHING needed. All wood parts pre-cut and formed of the finest hardwoods. Excellent metal fittings, quality rigging. Full plans and English instructions give you a ship model ■ proud of and display.



CUTTY SARK Kit No. 765A. A 1:60 model of this world famous ship. (illus.) .....\$65.95

CONSTITUTION Kit No. 766A. 1:60 scale model of American "Old Ironsides" with 52 .....\$87.95

Boyd Models Catalog No. 10 .....\$1.00  
Steingraeber Ship Catalog.....\$2.00  
Constructo Ship Catalog.....\$3.00  
Ship Models and How to Build Them.....\$5.95



## BOYD MODELS

810 East 14th St. Los Angeles, Calif. 90021



Graupner

### THE BEST IN FLYING

#### CUMULUS

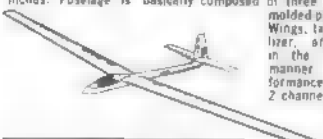
Here is the king of sailplanes, by the king of quality: Graupner. Designed for lowline and slope soaring, or power assisted thermal flying, 2 channel; rudder and elevator. Wing span 110 1/4". Weight (ready to fly), 56 oz. Foam wings are already holes covered and sanded, fuselage is piece of plastic ready to paint, all other parts sanded, and ready for "film" or paint.



\$189.95

#### CIRRUS

The Cirrus is a 1/5 scale model of a full size sailplane manufactured in Germany. Wing span of 118 inches, overall fuselage length of 49 inches. Fuselage is basically composed of three high impact molded plastic pieces. Wings, tail and stabilizer, are built up in the conventional manner. A high performance sparer for 2 channel RC.



\$79.98

#### KWIK FLY MK III

This is the world champion model designed by Phil Kraft for aerobatics. Wing span of 59 1/2 inches and will take up to a 60 for 4 channel RC equipment. This model is easy to build due to its extensive pre-fabrication.



\$95.98

Dealers, Wholesalers, Write to AMM Today to Order These Hot Items.

Catalogs: CA-77 Gas Model Cat 10c; CA-15-1971 4-color plastic kit cat. new! 50c; CA-24-1972 Airbus color cat. 68 pages \$1.50; CA-25-Airbus price list, no picture! 10c. Allow five weeks for catalogs, by third class mail. For first class mail add 25c for each cat., individually, or 75c for all catalogs, normal ten days delivery.

Mail Orders—try your AMM dealer first. If he cannot supply items desired, send his name and address with your order. Orders less than \$3.00, add 50c handling charge. If the service is not completed promptly, write to: 1248 Gilbert Road, Meadowsbrook, Pa., 19045. For prompt attention to mail order, address to:

CS 2062



ASSOCIATED HOBBY MANUFACTURERS, INC.  
E. Cayuga St., Phila., Pa. 19120

(Continued from page 98)

particularly annoying since white is the easiest color to apply (especially with SuperPox over the white primer). But Terry's was the best, whether they were on target all the rest of the way down the line or not. Handicap judging is a thankless task; far be it from me to add to their burden. Certainly Bob Violett didn't agree with them when he found his beautiful bronze mid-wing Cosmic Wing, with all the detail of rivets, control surface striping and the like, was in fact seventh rather than second (he was looking at the wrong end of the first row). And apparently it doesn't matter whether your engine is fully cowled or not. Terry Prather's was the only fully cowled engine among the first six; he does it by having an overlarge cowl on the right side which nobody ever notices.

In FAI Pylon, this time Garry Korpi did what he came so close to doing last year: that time he was third, this time he went all the way for an unchallenged first place. His most serious competition had bad cases of the cuts. Bob Smith couldn't find the No. 3 pylon on the FAI course, kept flying it like Formula I, for two zeroes. Chuck Smith had a perfect score four out of five heats, but in his third heat he went to the line to find he had a dead receiver. During the qualifications Whit Stockwell's P-51 died just after release and there it sat in front of Doug Spreng, who turned sharp left to avoid it on takeoff and ended up crashing near the No. 3 pylon while trying to get up flying speed and avoid the officials in the area. Pete Reed's fine consistent performance earned him two firsts, two seconds, and a third to place fourth in the finals. Bob Upton had the same points as Pete Reed but a slightly slower time to take fifth.

As almost always in Pylon Racing, the finals were full of surprises. No one

who watched Telford/Violett qualify in FAI would have predicted anything but first for them. No one would have figured Bob Smith for 19th in Formula I, or that Garry Korpi would fail to qualify. Terry Prather lived pretty much up to expectations, with a solid second in FAI, though he might easily have been higher than fifth in Formula I—he crashed his No. 1 ship on landing during the qualifications, and his back-up has never been as fast even though they appear to be identical. For Whit Stockwell to fail to qualify with the best engine he's ever had was beyond our ability to fathom: we were just snake bit, that's all there is to it. And we weren't alone. It was a strange Nats—unpredictable, surprising, but always fun, good sportsmanship, good fellowship.

### BEHIND THE SCENES

(Continued from page 39)

Executive Director John Worth and Nats Manager Ron Morgan arrived at Glenview.

One of the first problems encountered was a lack of any station public affairs office planning concerning advance publicity. It had been assumed that despite the Navy's minimum support situation, the normal public relations effort would be provided, simply to protect the Navy's interests and to obtain maximum publicity from the event. When this was found to be not so, AMA's PR man, Bob Lopshire, was called in several days sooner than was originally planned. He immediately got things rolling to provide an AMA effort to replace the usual Navy support.

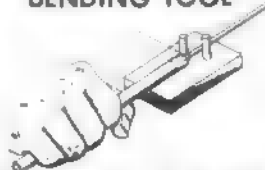
With the help of Navy officers Geimer and Needham, the publicity effort quickly produced good newspaper, TV and radio promotion. In fact, the effort also produced good national promotion, due to Nats visits by commentator Paul Harvey and by a CBS network crew headed by newsmen Hughes Rudd.

Other problems were solved during that week, including a big one concerning how the

### EXCITING NEW PRODUCTS FROM ROM-AIR

OWNER'S MANUAL  
Now available a completely new owner's manual for the famous Rom-Air Retractable Landing Gear System. This manual incorporates all of the knowledge we have gained from hundreds of field reports. Write or call today for your copy.

#### WIRE BENDING TOOL

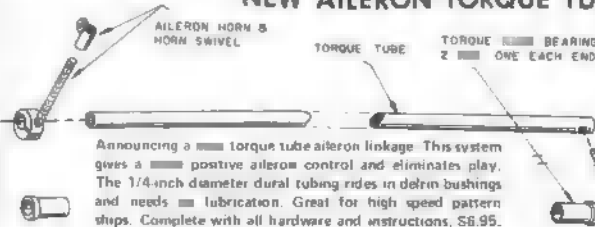


last a tool for making the difficult job of bending landing gear wire. \$9.95.

#### BELLY MOUNTED NOSE GEAR

Announcing a Belly Mounted Retractable Nose Gear compatible with our system. This gear is available in addition to standard firewall mount gear.

#### NEW AILERON TORQUE TUBE



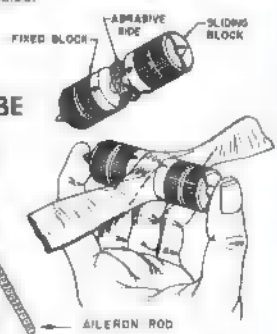
Announcing a torque tube aileron linkage. This system gives a positive aileron control and eliminates play. The 1/4-inch diameter dural tubing rides in delrin bushings and needs no lubrication. Great for high speed pattern ships. Complete with all hardware and instructions, \$8.95.

### ROM-AIR

INTERNATIONAL, INC.  
974 85th St., Brooklyn, N.Y. 11219  
Phone (212) 832-4842

#### PROP TRUER

Tru-Prop is a new propeller balancing and correcting tool. This precision tool incorporates an abrasive surface for correcting imperfections in the hub thickness and doubles as a prop balancer. A must for a true running, vibration free prop. \$5.95.





**HOBBY WORLD is where you are!**  
**A HOBBY WORLD is what we are!**

## Don Lowe's "Phoenix V" \$49<sup>95</sup>

Kit includes fiberglass fuselage and vertical fin. Bulkheads and maple engine mounts installed. Foam wing and stab included in kit.

Feature  
of the Month

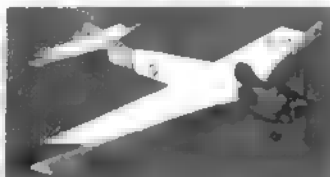


**DEALERS**—get your special price list. These kits carry full dealer discount. Write or call for full information!

**DADDY  
RABBIT**



**A-6  
INTRUDER**



Sleek fiberglass fuselage and vertical fin; foam wing and stab. Quality kits with bulkheads and maple engine mounts installed. **\$49<sup>95</sup> each**

## 1/4 MIDGETS

MINNOW  
P-51  
P-63 KING COBRA

**\$34<sup>95</sup> each**

**ORDER TODAY!** Make a list of what you need and write or call for confidential price list. We've got fast service 24 hours a day . . . save the Bob Reuther way!

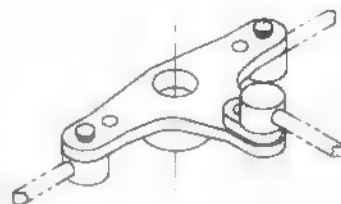
## BOB REUTHER'S HOBBY WORLD

6602 HIGHWAY 100 DEPT. A  
NASHVILLE, TENNESSEE 37205, U.S.A.

**HOURS:** DAY (615) 356-1225  
NIGHT (615) 352-1450

**TENNESSEE'S  
LARGEST  
SHOP**

**NEW!  
RETRACT ARM**



Furnished with special snap in push rod holders. Choice of 2 different throws.

Outer holes 1-1/16" throw.  
Inner holes 13/16" throw.

Stk. #41 - for KPS-10 servo.  
Stk. #42 - for World E. servo.

Price .98¢ each

See your dealer or order direct  
add .25¢ for post. & handling

**ROCKET CITY SPECIALTIES**  
103 Wholesale Ave., N.E.  
Huntsville, Ala. 35811

## BIG DADDY 88

**BIG AND  
BEAUTIFUL**



- EASY TO BUILD AND FLY
- TAKES REGULAR 8 OR 6 CHANNEL
- COMPLETE EASY TO FOLLOW
- INSTRUCTIONS INCLUDED

**BIG DADDY 88**

• WING SPAN 19 IN • WING AREA 1658 SQ IN  
• FLYING WEIGHT 11 LBS APPROX • ENGINE 8.50 UP  
• KIT INCLUDES ALL DUAL ENGINE MOUNT  
• FUSELAGE AND WING KITS AVAILABLE

**QUALITY COUNTS-  
BIG DADDY 88 HAS IT!**

WRITE FOR FREE BROCHURE  
**TEXAS  
MODELS**

1092 Dunes Dr. • Amarillo, Texas 79107  
• 806 383 1301

## European CARD MODELS

The JUMBOS

7-1461 DORNIER DO-X (1:100) \$1.94  
7-1463 BOEING 747 (1:100) \$1.14

SIX MILITARY PLANES (FIVE TYPES)  
(1:50) \$4.04

**special**

Large Transports (1:50)  
7-913 DC-7C 36" SPAN \$1.30 (\$1.30 Reg.)  
7-989 CONSTELLATION \$1.90 (\$1.30 Reg.)  
7-900 ELCA \$1.30 (\$1.30 Reg.)

Foreign Orders  
Postal Orders, Credit Card,  
Bank Check, collectible in  
U.S. Funds without charge

California Residents  
5% Sales Tax  
N.C.G.O.D.

PLANES, SHIPS, SUBS, TRAINS IN FULLY COLORED,  
THREE DIMENSIONAL AND ASSEMBLY SCALE  
MODELS FROM 1:100 TO 1:1000. DETAILED CONSTRUCTION  
SUPPORTS, AND MORE. NO. 1000 SERIES. NO. 1000 SERIES.  
NO. 1000 SERIES. NO. 1000 SERIES. NO. 1000 SERIES.  
INSTRUCTIONS IN ENGLISH AND FRENCH.



**ONLY  
IN CARD**

\*1274 SCHARNHORST  
\*1281 U-2300  
\*1284 KARLSRUHE  
\*1210 U-2300  
\*1281 ONASSIS CHRISTIAN

(WATERLINE)

SHIPPING CHARGE  
\$1.10 (U.S.A. & CAN.)  
\$1.20 (U.S.A. & CAN.)  
\$1.30 (U.S.A. & CAN.)  
\$1.40 (U.S.A. & CAN.)  
\$1.50 (U.S.A. & CAN.)

**JOHN HATHAWAY**  
410 W. 6th St/Box 1287  
San Pedro, Calif. 90731

## ZONA SAWS

The One and Only Famous Line of Hobby Saws

from \$1.00

**F.A.I. Model Supply**

1112 W. Mission Lane Phoenix, Ariz. 85021

# AEROSPACE HISTORIAN

a quarterly  
\$8 a year

Department of History  
Kansas State University  
Manhattan, Kansas 66502  
USA



## "LIGHTNING-BOLT 21"

- 1-1/2 LB.
- 21-3/4" LONG
- EASIEST KIT EVER
- FIRST .19 MONO OVER 30 M. P.H.
- HULL, DECK & PLANS - ONLY \$25.00
- COMPLETE '71 CATALOG 50¢ - PLEASE GIVE ZIP CODE WITH ALL INQUIRIES AND ORDERS



### G.E.M. MODELS

P.O. BOX 342 - DEPT. AM  
BROADVIEW, ILL. 60153  
PHONE 312/279-7451

## CLEVELAND

World's Most Highly Priced Authentic Plans  
FOR MODELS YOU'LL BE PROUD OF!  
MODERNITY'S QUICKEST MAIL ORDER SERVICE

### JUMBO SCALE BUFFS

FAMOUS OLD C-D PLANS RETURN!  
1 1/2" SCALE GAS SIZE PLANS

Those Terrific Old C-D's Now in 1 1/2" Scale. Prices INCLUDE Patterns. Are Blow-Up of 1/4" Scale. Requiring Only Slight Reading-Up.

G1 Great Lakes 21A	\$9	G22 Ray Mustang	\$14
G158 Spad XIII	\$9	G24 Bunting P36 A	\$11
G15 Fokker D7	\$12	G64 Beech C-12 R	\$12
G188 Howard's Pale	\$12	G72 Turner Laird	\$9
G216 C. Hawk P8E	\$12	G73 Super Sparrow	\$12
G228 Howard's V4	\$12	G74 Messer Me109	\$12
G48 Turner WW	\$9	G75 Grum Skyracer	\$12
G49 Hawk P11C-2	\$12	G83 Grum Wildcat	\$12
G51 Comet Rep	\$12	G139 J. Japowich P. 1	\$8

**MINIATURE TWIN-MOTOR C-D PLANS**  
COMPLETE with Patterns in 1/4" Scale. Take One Half  
1 1/2" Scale Catalog \$5.00. Patterns Incl.

M33 Bunting 747	\$8	M105 Wes Whirlwind	\$6
M45 Bomber 8-10	\$8	M115 D. Havoc A-20	\$9
M51 Comet Rep	\$9	M125 Mustang B-25	\$10
M75 Skyracer XT5F-1	\$6	M135 Morander B-26	\$12
M85 Lightning P-38	\$7	M143 DH Mustang	\$8
M95 Hudson Bom	\$9	M155 B1 W. Hawk P-51	\$12
M100 Bunting 8-17	\$12	M165 Mustang DG-1	\$14

**NOW! MANY NEW MULTI-MOTOR DESIGNS.**  
Huge New Multi-Motor C-D Designs. These Plans Are Complete with Patterns. As Named Above. 1 1/2" Scale. Or Divide \$1.50 Spans in Our Catalog By 3 and Multiply Answer By 2.

D43, 510, D51	\$8	D75 \$8	D85 \$12	D95 \$14
D100 \$12	D125 \$7	D135 \$12	D175 \$14	D185 \$16
D195 \$16	D245 \$12	D255 \$16	D265 \$18	D275 \$20

**MANY PATTERN SUPPLEMENT PLANS NOW AVAILABLE SAME PRICE AS PRINTWOOD**  
\$5.00. Send \$4.00. You May Order P-5 Pattern Supplement for A-1 Multi-Motor C-D Jobs. Prices Same As Printwood. Many others.

**THEY'RE ALL TALKING ABOUT IT!**  
THE NEW PICTORIAL C-D CATALOG  
Many More New Jobs Described - Our Pictorial Catalog. A-1 Super. For Free Catalog.

**CATALOG SEND NOW TODAY - 2 YEARS \$1.10**  
DEDUCT 10¢ IF YOU SEND COIN OR CURRENCY  
EXTRA CATALOG COPIES NOW 50¢ EACH

Most newly represented are WW, WWII, Golden Era military and commercial racers. Truly the serious design collector's paradise. For you'll not find such a gloriously splendid lot of designs anywhere else on earth. Just order a catalog and see for yourself. We guarantee satisfaction or your money refunded.

\*And 10¢ in All Plan and P-5 Order. Super Catalog.\*

**CLEVELAND MODEL & SUPPLY CO.**  
P.O. Box 78, Detroit, Mich. 48206, Cleveland, Ohio 44102

Control Line circles were to be marked. Because of new paving the runway the usual painted lines were not permitted. Nor was any form of whitewashing or washable marking. It was felt by Navy interests that any of these would leave a permanent stain, and this would not be acceptable on a runway used for regular full scale operations. It was finally agreed that masking tape would be acceptable since it could be peeled off or would deteriorate by exposure to weather.

Then came another shocker: 1400 yards of masking tape were required! At normal prices the cost would have been unthinkable, but it was finally arranged that AMA could buy the tape at government cost, and this kept the Nats budget within control.

Meanwhile arrangements had been made to borrow two miles of snow fencing from the State Highway Department. Navy help got it transported from Chicago to Glenview, but it was AMA's job to get it put in place on the field. It was obvious that between the fencing and runway marking jobs a major effort would be required on the weekend immediately preceding the Nats.

Then came another last minute requirement that threatened to double the entire workload. The Navy insisted on fencing or roping off all station aircraft for protection against curious spectators. This added at least another mile of effort. But with many surplus barrels and thousands of feet of rope (also bought by AMA) the additional fencing requirement was met.

At this point, on Sunday before the Nats was to start, everything depended upon a massive personnel effort by AMA to get everything ready on the field in time. The job was divided between two basic groups: airlift officials and local volunteers. About seventy AMA officials had arrived by Navy airlift on Saturday. Meanwhile many Chicago area volunteers, organized under the leadership of Bob Vojislav (Woodbridge, Ill.), arrived to help. In addition, other officials from out of state drove to the Nats and joined the effort.

It all came together that Sunday, and the job continued through the next day. The fencing got up, the runways got marked. At the same time the special Nats phone system got installed as did 2400 feet of tables in the contestants' work hangar, and many portable sanitary toilets - all these contracted for by AMA. In addition, the trailer and tent grounds got laid out, and dozens of trash barrels got distributed.

The Nats hobby shop got built and stocked, a trophy cage also got built. Before Nats week started, the usual huge Scale model display cage had been built. This was a special effort by the Chicago Scalemasters Club: AMA paid for the materials; the club did the work.

AMA also set up a printing plant operation at the Nats to avoid costs which would be charged if Navy facilities were used. An offset press and photocopying machine were borrowed. Throughout the Nats, therefore, all printing was done by AMA including Nats results, contestant instructions, publicity handouts for spectators. This was a brand new and massive effort by AMA handled very well by HQ employee Art LaLonde.

AMA also organized and operated a major transportation network to support the Nats operation. Three small and one larger van were rented, as well as a fleet of a dozen cars for airlift officials who had to chase back and forth constantly on the field. This network was supplemented by many local cars used by

## Index to Advertisers November, 1972

Advertiser	Page
AHM	102
Academy Products, Ltd.	78
ACE Radio Control, Inc.	70-71
Aerospace Historian	104
Aero Precision	90
Aerotech Engineering	96
Ambroid Co., Inc.	72
Bachmann	77
Badger Air Brush	13
Boyd Models	102
C ■ H Sales	97
CMI Quality Kits	73
Calgary Hobby Supply	73
Cannon Electronics	97
Casburn, Johnny Mfg. Co.	104
Cleveland Model Supply	80
Collectors Journal, The	80
Cox, L.M. Mfg. Co.	67
D. A. Enterprises	85
Dee Bee Models	95
Debris Hobbies, Inc.	87
Diane Publishing Co.	73
Du-Bra Products	75
Dumas Products	92
Products	5
F.A.I. Model Supply	103
Fabrator	76
Fox Mfg. Co.	74
G.E.M. Models	104
Goldberg, Carl Models, Inc.	9, 19, 90
Grish Brothers	82
Gullow, Paul K., Inc.	86
Hannon, W.C.	74
Hathaway, John	103
Heath Co.	82
Hobby Helpers	75
Hobby Hideaway	72
Hobby Lobby	10-11
Hobby Market, The	97
Hobby People	6-7
Hobby Shack	12-13
Hobby World	103
Holman, Bob	88
Indy RC Sales	95
K & S Engineering	12
Kayeff	50-51
Kraft Systems	Cover II
Lanier Ind., Inc.	89
Lindco	89
MnM Radiomodels	73
Microcraft Corp.	96
Midwest Products	79
Miniature Aircraft	78
Model Materials Co.	97
Model Rectifier Corp.	Cover 4
Morgan, Sid	75
National Hobby	97
Nelson Model Products	80
Oclura Models	80
Orbit Electronics	93
Pactra Industries	96
Penford Plastics	79
Phil-Lays	86
Pelky Hobby Dept. Store	74
Pro Custom Hobbies	79
Praline	94
RC Wings	78
RS Systems	72
Randy's Corner	105
Rocket City Specialties	103
Rom-Air International	102
Royal Electronics	87
Scientific Models, Inc.	Cover 2, page 3, 99
Shomrock Competition Imports	83
Sig Mfg. Co., Inc.	54-55
Sonic-Tronics	93
Stanton Hobby Shop	98
Sterling Models, Inc.	62-63
Strato Model Products	76
Superscale	105
Su-Pr-Line Products	105
Tatone Products	94
Tern Aero Co.	85
Testar Corp.	83
Texas Models, Unltd.	103
Tiny Tats	74
Top Flite Models, Inc.	81
Tower Hobbies	87
Verdell Instrument Sales Co.	73
Vortex Engineering	78
Williams Bros.	78
World Engines, Inc.	68-69
Ziac, C.A., Inc.	75



C/L ENGINES: FOX .15-\$7.50, .25-\$9.50, .35, .36X-\$12.00, .36X88-\$15.00, .40-\$13.25; ENYA .09-\$9.50, .15-\$11.00, .35-\$15.50, .45-\$25.00, .60-\$38.50; O.S. MAX .10-\$8.80, .15-\$11.00, .20-\$12.00, .25-\$13.00, .30, .35-\$14.00; K&B .15-\$19.50, .35 Stallion-\$9.50; COX .049 BB-\$4.50, 3/12.60, .049 GB-\$5.50, 3/15.00, Medallion .049-\$7.50, .09-\$9.10, .15-\$11.25, Tee Dee .010-051-\$9.10, TD .09-\$10.50; MIDWEST Panther, Cougar-\$11.50, Magician 15-\$7.00, Magician 35, Kingcobra, P-51 Mustang, Messerschmitt-\$10.00, 3/527.00; TOP FLITE Super Monokote 4-\$23.00, 12-\$60.00, 9 assorted trim sheets-\$5.67, Mustang, Quik Fli III-\$31.50, SE5A-\$33.60, P-40 Warhawk-\$35.00, 2/566.00, Contender-\$25.50, Headmaster-\$13.50, Top Dawg-\$12.50, Taurus-\$29.00, Tauri-\$19.50; MIDWEST Cardinal-\$16.50, Little Stik-\$16.50, Sky Squire-\$24.50, Tri-Squire-\$13.50, Esquire-\$12.25, Lil Esquire, Tri-Squire-\$10.00; STERLING Fledgling-\$19.00, 1-26-\$15.00, 1-34, Rimfire, Lancer-\$20.00, PT-17-\$33.60; JENSEN Ugly Stik-\$40.00, wing kit-\$15.25; BRIDI Kaos-\$39.50, wing kit-\$19.00, RCM Trainer-\$37.00; ROYAL B-25-\$56.50, P-38, Little Stinker-\$48.00, Cessna 310G-\$52.50, Spirit of St. Louis, Cessna 206-\$36.50, Cessna 182, Hein Sr.-\$40.00; AFI Malibu-\$18.50, Monterey, RF-4-\$22.00, high start-\$22.50; Windward-\$18.50; GRAUPNER Middle Stik-\$32.00, Cirrus-\$40.00, Cumulous-\$95.00; VK Cherokee, Navajo-\$28.00, Cherokee Babe-\$20.00, Mini-Flite Rivets-\$22.00; DREMEL Moto speed control-\$14.00, No. 271 complete-\$32.00, No. 281 complete-\$38.50, No. 572 complete-\$43.00; STAFFORD Commanche, Aircoupe-\$35.00, Sperry Messenger-\$32.00; Joy Mars-\$28.00, C-3-\$35.00; UNIVERSAL WHEELS 2 1/2-\$3.60, 2 1/4-\$3.75, 3-\$3.90, 3 1/4-\$4.05, 3 1/2-\$4.20, 3 3/4-\$4.35; HOBBYPOXY I-3/\$2.10, II-3/\$6.30, IV-3/\$4.20; AERO PREC. AT-6 Texan-\$26.00, Touchdown-\$16.75; A-Justo-Jig reg.-\$29.99, full house-\$38.00, fuse adapter-\$8.00.

ALL POSTPAID — INSURANCE ADD \$.30

local area officials. In an operation involving over 150 Nats workers, transportation was a key element to success.

All these and many other factors went into producing an outstandingly successful Nats. Whatever problems were involved behind the scenes, the main goal was to achieve a good contest. This was done, and to most contestants the '72 Nats was much like others before it—the problems and extraordinary efforts were not visible to most flyers.

For this Nats the behind the scenes efforts were more important than usual because they would determine what any future Nats might be like. Had AMA not been able, for example, to do on its own what had been done by the Navy in past years, the likelihood of continuing the Nats on a large scale basis would have been greatly diminished. The 1972 effort proved that AMA can produce the same type of Nats so that our horizons need not be limited to a much lesser version than we have become accustomed to. On the other hand, the cost was tremendous, financially and physically. Whether or not another such major effort should be tackled for next year is currently a big question to be decided by AMA officers.

That question is being resolved at present, from among several choices currently available. One is to go again at Glenview on the same basis as the '72 Nats (Navy sources have indicated a willingness since '72 involved so little Navy effort compared to previous Nats); another is to go to Los Alamitos Naval Air Station in California (involving even less Navy effort since this is no longer an operational airfield for aircraft); another is to go to a private field such as Oshkosh, Wisconsin (where

extra income is available from public admission charges); and a brand new possibility is Wichita, Kansas, based on an offer involving community support from that area. AMA's Executive Council has promised to review all possibilities and announce the date and location of the next Nats before the end of 1972.

While the question of the '73 Nats is being resolved, a few closing memories of the '72 event linger. One is that of Ed Sweeney, editor of American Aircraft Modeler, all alone on Sunday evening of the last day of the Nats dumping barrels and rolling up snow fence. He had volunteered to help and did it, at a time when most everyone else had quit in exhaustion. Similarly, on the day after the Nats, one lone volunteer single-handedly did the final cleanup at the contestant hangar. Ray Collins, of New Orleans, simply grabbed a broom and worked all day on his own. He wanted no favors or compensation—this was his contribution in appreciation for having enjoyed many Nats.

Many others pitched in during Nats week for similar reasons. They emptied garbage cans, swept the hangar floor, set up work tables or took them down, and generally offered their efforts without looking for recognition. Another good example was that of the Nats workers who pitched in even when they learned their airlift flight would be late departing. They worked on Monday morning, after the Nats, taking up the runway markings.

Yet even with these extra efforts—and despite a tremendous final Nats day cleanup by contestants and officials—AMA had to hire a crew to finish the job. It took two more days after the Nats, at a cost of \$600, before we could give the Navy back its air station in

first-class shape. It was well worth it, as we left in good graces and with the Navy's willingness to do it again in '73, but it was a last reminder that a Nats effort on our own does not come easily or cheaply.

It was a tremendous Nats, in many ways perhaps the best in 25 years of Navy hosting—certainly the biggest. Hopefully we will go on to other great Nats, with or without the Navy. In the meantime the '72 effort should make us all grateful for those great years of Navy support—we found out in '72 just how much of a contribution the Navy had been making behind the scenes, and without question it was tremendous. In weariness, therefore, after the experience of 1972, we can say in full appreciation, "Thanks, Navy, for 25 great years of Nats history—regardless of where we go in '73, we're grateful!"

**SUPERSCALE**  
WW II SCALE AIRCRAFT PLANS

Send \$ .25 for DEPT. CA71  
Brochure to: Box 201 Arlington, Texas 76010

**SUPPORT** **AEROSPACE EDUCATION**

## ADVANCED PUSH ROD SYSTEMS

COMPLETE WITH ALL HARDWARE

from  
**SU-PR-LINE  
PRODUCTS**  
PLAINFIELD, ILLINOIS 60544

**ProROD** T.M.  
THE RIGID PUSH ROD SYSTEM

**MASTEROD** T.M.  
THE Flexible Cable PUSH ROD

**NYROD**®  
THE Flexible PUSH ROD

**MASTEROD-XF** T.M.  
THE Extra Flexible Cable PUSH ROD

## QUALITY HOBBY SHOPS

Quality Hobby Shop spaces are sold on a six-month basis at \$7.00 per month, payable in advance. All insertions must be consecutive. No mention of mail-order business is permitted. Closing Date: 10th of third preceding month.

### NEW YORK—BUFFALO

Factory authorized Orbit and Micro-Avionics sales-service center. New Orbit and Micro radio systems at very best prices. Complete stock of parts and accessories. Immediate service on all Orbit and 1970 Micro systems. Guaranteed reconditioned previously owned Orbit systems always available.

#### ORBIT NORTHEAST

3833 Harlem Rd. 14215 Ph. (716) 836-6860

### OHIO—CLEVELAND

We carry the most complete line in Ohio for your model airplane hobby. Also large HO train dept., Boats, R/C motors, parts, supplies, dope, balsa, tools, books, magazines, etc.

#### NATIONAL HOBBY, INC.

5238 Ridge Road (216) 749-4750

### MASSACHUSETTS—CAMBRIDGE

Model planes, motors, railroads, ships, radio control equipment and accessories—also slot racing supplies. Open 9:00 AM to 5:30 PM daily & Thurs. evenings.

#### CROSBY'S HOBBY CENTRE

1704 Massachusetts Ave. (617) 547-4389

### NEW JERSEY—IRVINGTON

The oldest established hobby shop in New Jersey. Everything in trains, ships, planes and rocketry. Hours 10 to 7 daily, 10 to 1 on Sunday.

#### THE HOBBY SHOP

758 Springfield Avenue (201) 372-6211

### PORTLAND—OREGON

Portland's Headquarters for Radio Control Equipment, all major brands, all at discount prices. "Shop American," "The Friendly Shop."

#### AMERICAN PET & MODEL AIRPLANE SUPPLY COMPANY

4308 S.E. King Rd. in the Disco Mart shopping center. Ph.: 654-8777 Zip: 97222

### SOUTH CAROLINA—BEECH ISLAND

Near Augusta, Georgia. Headquarters for Radio Control Supplies—kits—motors and hard to get items. Building of kits or custom model. Open 9 a.m. till 11 p.m. plus Sundays till 1 p.m.

#### MILLER'S HOBBY SHOP

315 Laurie Drive (803) 822-0565

### COLON, REPUBLIC OF PANAMA

The only hobby shop in the country. Model Planes, Motors (radio controlled), ships, H.O. and N Gauge trains, complete stock of parts and accessories.

#### KELNIA S. A.

Front Street, Colon, P.O. Box 2086, Zone 3, Telephone, 47-7040. Warehouse in the Free Zone of Colon.

### MICHIGAN—DETROIT (FERNDAL)

Trains, planes, stamps, coins, R-ways. Over 50,000 items for hobbyists. Mich. largest antique train collection. Look for our 55' RR crossing sign. Arnold Rapido.

#### MODELS HOBBY CENTER

22524 Woodward Ave. (Zip 48220) LI-3-2242

### GEORGIA—DECATUR

HO Railroads, Planes, Model Car Racing. Open 11 AM to 10 PM. Metro Atlanta's Friendly hobby shop.

#### HOBBY HOUSE

#### DECATUR SPEEDWAY

130 E. Ponca de Leon 378-2253

### HONG-KONG—KOWLOON

The most complete stock of aeromodeling and hobby supplies in the Far East. Sole agents for Graupner, O.S. and Min-X and agents for Ver-non, Frog, Solarbo and many others.

#### RADAR CO., LTD.

2 Observatory Road Kowloon, Hong Kong K-680-507

### ALABAMA—BIRMINGHAM

If it's hobbies, we have it. Most complete line in Southeast. Model airplanes, motors, trains, slot cars, Radio Control equipment—cars, planes, boats and accessories.

#### SPIVEY DISCOUNT

1303 Tuscaloosa Ave. 205-785-9690

### AVONDALE ESTATES, GEORGIA

Southeastern factory repair center for Micro Avionics and Orbit systems. Complete stock of parts. All work guaranteed. Parts in stock for Blue Max and most systems. Authorized factory service center for Testors planes and radios.

#### HOBBY DISTRIBUTORS

4 Avondale Road, P.O. Box 102, Avondale Estates, Georgia 30002

### RHODE ISLAND—PAWTUCKET

Radio Control, Model Planes, Motors, Ships, Rocketry, Arts Crafts, Slot Racing, Parts and Accessories, H.O. & N Gauge Trains, Open 6:30 P.M. to 10:00 P.M. Daily & Saturdays 12:30-5:00 P.M.

#### E & M HOBBIES

81 Columbus Avenue (Zip 03860) (401)-728-4320

### OHIO—JAMESTOWN

Radio Control Specialist. Have done professional building and consultation for research work. Retail stock consists of Radios, Engines, Mufflers, Kits (Arf. & Balsa), R.C. Helicopter Kits, & most support items for R.C. Discount prices. 15 years experience at your service. 8-10 Eve. 10-6 Sat.

#### MID-OHIO RADIO CONTROL

3949 North Lake Shore Drive 513-675-2613

### VIRGINIA—ARLINGTON

Washington D.C. Area? Try us First! Model aircraft, R/C, U/C, F/F., R/C Cars, boats, engines, accessories, equipment, publications, tools, unimat lathes and parts. Hours: Mon, Thurs, Fri: 10-9, Tues and Sat: 10-6.

#### ARLINGTON HOBBY CRAFTERS

625 N. Glebe Rd., Arlington, Va. 22203 522-6442

### SOUTH CAROLINA—NEAR BOWMAN

Located on Road 36 just off I-26. Complete U-Control Center on 12-acre flying field. Big Discounts! Open 11 to 8 weekdays and all day Saturdays. Plenty of help for beginners. Flying every Sunday afternoon.

#### ACTION HOBBIES MODEL AIRPORT

Route #1, Box 63AB Bowman, S.C. 29018

### MEXICO—MEXICO CITY

The most complete stock of aeromodeling and Radio Control supplies in Mexican Republic. Factory authorized Kraft System, Pro Line System, Webra and H.P. Engines.

Sales and Service center, all best items and the best prices.

We accept Bancomatic & Bancomer Cards.

#### MATHELIN MODELISMO

Retorno 3 De Gral. Ignacio Zaragoza No. 47 Mexico 9, D.F. Tel: 5-71-75-07

### WEST VIRGINIA—PARKERSBURG

Planes-R/C and Control Line. Engines and Accessories. All kinds of Goodies! Kraft Radios, Sig Products, Lionel Trains. Also HO and N gauge trains and accessories. HO slot track in store. HO slot cars and parts. Craft and Hobby supplies.

#### WILSON HOBBY SHOP

Park Shopping Center, Parkersburg, W.Va. 26101 1-304-428-0713

## CLASSIFIED ADS

Rates: 30¢ per word (including name and address). Minimum—14 words. Send remittance with copy and order to: AMERICAN AIRCRAFT MODELERS, 733 Fifteenth St., N.W., Washington, D.C. 20005.

COLORS #84 RUBBER BANDS, 1/4 lb. post paid \$1.00. Red, blue, yellow, black, white, tan. MEISTER, 711 Main St., Keokuk, Iowa 52632.

MODEL ROCKET PORTFOLIO, \$2.00 four issues, 10 plans. Catalog 25 cents. ROCKETS-f, P.O. Box 7274, Long Beach, Calif., 90807.

FREE CATALOG—1,000 aviation books. Many with scale drawings and 3-views AERO PUBLISHERS, 239 M Aviation, Fallbrook, Calif. 92028.

WORLD WAR I HEX-CAMOUFLAGE, 4 colors, individually cut pieces, \$2.95 pkg. 1"-1" and 2"-1" scale. VINTAGE MODEL AIRCRAFT, Route 3, Box 219, Coos Bay, Oregon 97401.

BACK ISSUES AIRTRAILS, Air Progress, Aerodigest, Flying, Flying Aces, Popular Aviation, Aeromodeler, Airnews, M.A.N., all model, pulps, etc. AVIATION MAGAZINES, 24348 Crenshaw Blvd., Torrance, Calif. 90505.

MONEY! Save lots of it! We know of nobody who beats our prices. Write for free R/C-Kits-Supplies list. PUGET SOUND R/C ELECTRONICS, 1547 Hoff Rd., Bellingham, Wash. 98225.

CUSTOM BUILT Precision geared 12 volt unit. Fuel and defuels very fast. Written guarantee. Send 10¢ for brochure. CALEM ENTERPRISES, Box 38, Golden Bridge, N.Y. 10526.

CANADIANS: Lowest discount prices on R/C systems, Engines, Kits, etc. Mail Order Catalogue 50¢. CANADIAN AERO-SUPPLY, Box 20, Station "O", Toronto 16, Ontario.

FREE FLIGHT FUN MACHINES—New and Old Timer parts, supplies, kits, 25 cents for catalog. FLYING MACHINES, Box 100, Richmond, B.C. Canada.

SUPER BUCCANEER BY BERKELEY, 4 blueprinted sheets, exact full-scale reproductions of original plans. Shipped in mailing tube \$7.95 set ppd. The CALICO CAT, 121 North Center, Statesville, N.C. 28677.

M.R.C. 710 Five Linear Servos \$275.00. Call (202) 889-2287 or write J. D. KING, 2860 Douglas Rd., S.E., Wash., D.C. 20020.

IGNITION ENGINE, THROTTLE, COIL, COMPLETE LITERATURE, 24¢ stamps. KOWAL, 6615 South Bell, Chicago, Ill. 60636.

CUSTOMIZED CLUB DECALS. Send your rough idea with name and address, with \$25.00. Receive 100 customized 3-inch decals—second 100 \$15.00 extra. INSIGNIA DECALS. For those large planes—German, SS Death Insignia, American British French \$3.00 per set. FOOTBALL HELMET DECALS All pro teams—Specify team, 50¢ per set. SEND ORDER AND CHECK TO: JUMBO DECALS, Box 1925, Orlando, Fla. 32806.

BUILD A 2-STAGE RUBBER BAND MOTOR with this amazing device. First stage—high power. Second stage—low power. With plans \$1.50. AL CAIN PLANS, INC. 3022 Chapel Hill Rd., #37-A, Durham, N.C. 27707.

WANTED: STANZEL and/or COMET INTERCEPTOR (Free Flight) Complete Kits, FRANK RENDE, 74 Newland Ave., Augusta, Maine 04330.

SCALE R/C KITS AND PLANS—62 1/2" Skyraider Plan \$5.95, 61 1/2" 1-47 Plan \$5.95 or complete kit \$64.95 (trans or bubble). Skyraider and 1-47 plans also include detailed cockpit as used in my NATH models, 15 other plans available. Send 25¢ for illustrated catalog. HUD NOSEN, Box 105A, Two Harbors, Minnesota 55618.

SUPER TIGER G-15F1 \$29.75, 88 RC \$19.95, 121/25—\$26.75, 40 RC \$23.95, G-65-RV-AHC \$44.75, Super Special—Max 15 RC \$14.95 postpaid. DON'S SALES & SERVICE, PO Box 224, Ft. Thomas, Kentucky 41075.

CASTLE LION HOBBIES—Weber 61RC—\$61.95, MRC 3CH-27MHZ—\$135.95, 3-CH-27 MHZ, \$240.95, 72 MHZ—\$57.95—\$260.75. Connecticut residents add 7% tax. Money orders, include 10% handling. P.O. BOX 635, Branford, Conn. 06405.

PROT BALANCER—Balances any prop vertically; Kit and instructions \$2.50; Plan and instructions only 50¢. MOTOR STARTER—Make your own starter from automobile blower motor; Kit or coupler parts and instructions \$5.00; Plan and instructions only 50¢. HOBBY SPECIALTIES, 305 W. Buckeye St., Clyde, Ohio 44341.

OKIE BIRD, 3/4-A Free Flight Contest Winner. Kit only \$6.00 postpaid. CLEMCRRAFT, P.O. Box 524, Sand Springs, Okla. 74063.

SCALE R/C PLANS. GRUMMAN TBF-1C 1 1/2" scale, wingspan 60 1/2" GRUMMAN F6F-5 HELLCAT 1 1/2" scale, wingspan 53 1/2"

RYAN FR-1 FIREBALL 1 1/2" scale, wingspan 60" BOEING F4U 1 1/2" scale, wingspan 52 1/2" GEE HEE R-1, 1932 PYLON RACER 2" scale, wingspan 50"

Full size scale plans, two sheets 36"x54" \$5.50 per set. \*Scaled from measurements on actual aircraft. Send 20¢ for brochure. AER-O-SCALE, PO Box 5413, Granada Hills, Ga. 91344.

CURTIS HAWK P8E, Plans & Construction Manual, 2" scale \$8.50 ppd. 1 1/2" scale, \$6.50 ppd. CURTIS GOSHAWK P10C-2, Plans and Const. manual, 2" scale only, \$8.50 ppd. HARRON'S ENTERPRISES, 1213 Holly Spring Lane, Grand Blanc, Michigan 48430.

ROSSI (1972) 15 George Aldrich prepared, never run with pan \$75.00, G. MARKHAM, 370 W. Sierra Madre Blvd., Sierra Madre, Calif. 91024.

FOR SALE: 304 lnn., R/C Engines, radios and kits. List \$1.00. AERO-TECH, P.O. Box 313, Cedar Falls, Iowa. 50613.

P-47D Thunderbolt Razor/Bubble 1 1/2" scale. Second 70 NATHS plans special \$4.95 canopy \$3.50. Fiberglass cowling \$8.00. Scale decals \$4.50. Complete balsa kit \$64.95, includes cowling, plans and free air or UPS postage. HURRICANE 1 1/2" \$69.95. Dauntless kit upon. Many more. BOB HOLMAN, P.O. Box 741M, San Bernardino, Ca. 92403.

# Victory



## FORMULA 1

1. Cliff Weirick
2. Larry Leonard
3. Harold Coleson

## F.A.I.

1. Garry Korpi
2. Terry Prather
3. Chuck Smith

High g loads, pounding vibration, buffeting, cramped installation, high speeds at low altitudes and super sensitive controls . . . no other part of the radio control sport demands so much from the radio control system as does racing. Perhaps that's why 70% of the entrants in the racing events of the 1972 Nationals used KRAFT equipment.

WRITE FOR FREE CATALOG

**KRAFT**  
SYSTEMS, INC.

450 WEST CALIFORNIA AVENUE, VISTA, CALIFORNIA 92083  
*World's Largest Manufacturer of Proportional R/C Equipment*

Model Rectifier Corporation  
2500 Woodbridge Avenue  
Edison, N.J. 08817

## Being chosen as the Systems for the Seventies

■ And they outperform because we've built reliability in at every turn. You want performance on the field. It's there. It's there because we bench test and field evaluate each rig a total of four times before you get your hands on it. We know it will perform. And that's the important thing.

We could go on about our integrated circuits, servo response times and resolution, or receiver sensitivity. We could talk about our test systems backed by the most complete and modern production test laboratory in the business. We could tell you about our other sophisticated electronics features, too, because we have some of the most outstanding. Yet the fact is, when you're up in the air, you want reliable response... not engineering rhetoric. You want performance you can see and feel. You'll get it, with systems for the 70's... from MRC.



## ... Because they Outperform



- F-713 THREE CHANNEL... with 2 rotary servos, 27 MHz \$170; with 2 linear servos, 27 MHz \$180; with 2 rotary servos, nickel cadmium batteries and charger, 27 MHz \$200. Add \$10 for 72 MHz.
- F-710 FIVE CHANNEL... with 4 rotary servos, 27 MHz \$310; with 4 linear servos, 27 MHz \$320. Add \$20 for 72 MHz. All F-710's include nickel cadmium batteries and charger.
- F-723 FOUR CHANNEL... single stick, w/2 rotary servos, 27 MHz \$200.
- F-724 FOUR CHANNEL... single stick, w/4 linear servos, nickel cadmium batteries and charger, 27 MHz \$310... for 72 MHz \$320.